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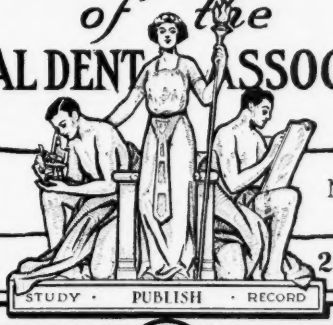

AUGUST, 1917

Eight Original Communications.

Conference of Deans of Dental Colleges.

Antitoxin for Gas Gangrene.

Field Equipment for Dental Reserve Corps.

Physicians and Dentists Under Selective Conscription.

Medical and Dental Students in the Draft.

Our Dental Motor Ambulances.

Dental Mobilization and the War.

Additional Preliminary Dental Examiners.

Roll of Honor of Patriot Dentists.

The New York Meeting.

Preliminary Program (Insert.)

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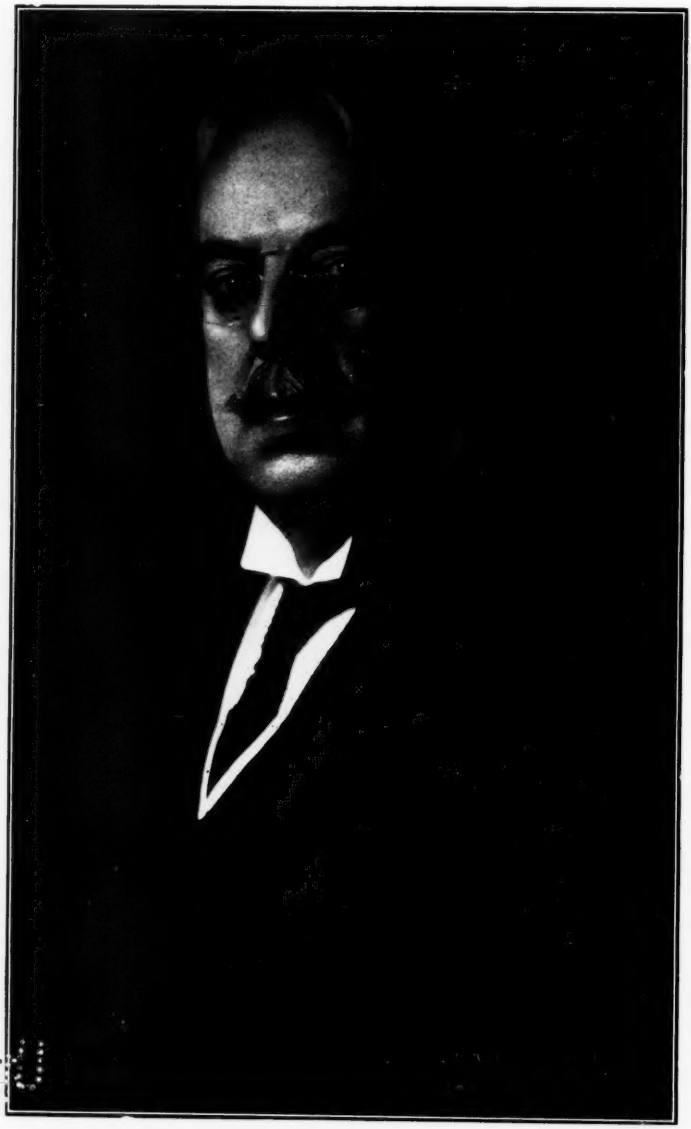

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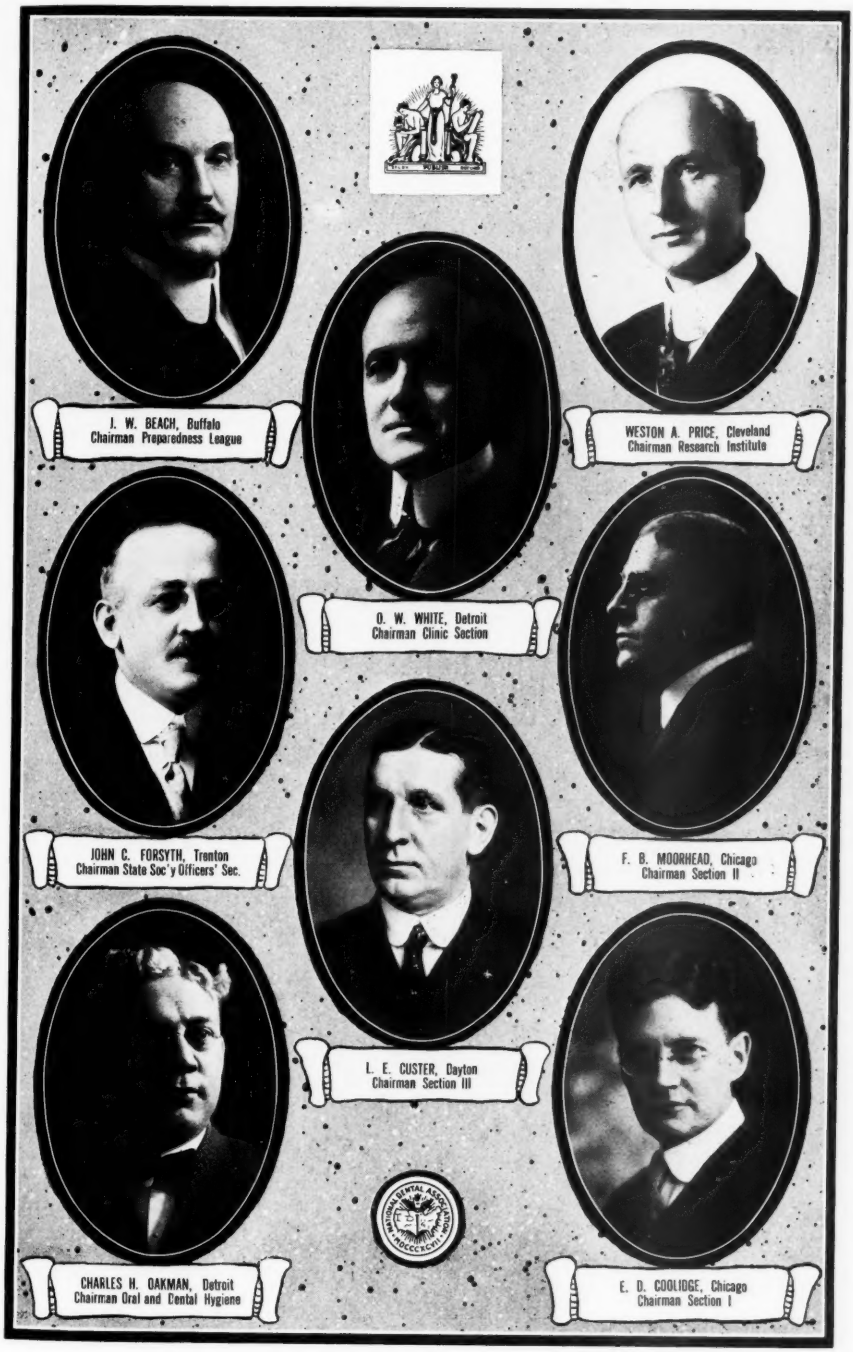

SOME OF THE SECTION OFFICERS—1917

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SOME OF THE SECTION OFFICERS—1917

THE JOURNAL
OF THE
National Dental Association
VOL. 4 AUGUST, 1917 NO. 8

Original Communications.

THE PREVENTION OF MALOCCLUSION.

By J. Lowe Young, D. D. S., New York City.

(Read before the National Dental Association at Its Twentieth Annual Session, Louisville, Ky., July 25-28, 1916.)

THAT prevention is preferable to cure is conceded by all possessing the true professional spirit. Then it would seem the duty of the dental profession to prevent in a large measure malocclusion of the rising generation. Let us consider how this can best be done.

If a court of reputable orthodontists were to determine when orthodontic treatment should be completed, it would unquestionably decide that when all permanent teeth, except the third molars, were erupted. Think of what a boon to humanity it would be, if all orthodontic appliances could be dispensed with at twelve or thirteen years of age. To show that it is possible to do this, is the task to be undertaken by your essayist.

In order to impress upon you what we are striving for, it is deemed advisable to quote from a paper by your essayist, read before the First District Dental Society, State of New York, October, 1908, and published in the Dental Cosmos, April, 1909.

"In the past few years considerable attention has been given to oral prophylaxis. Prophylaxis means, "Preservative or preventive treatment of disease." Oral Prophylaxis means, "Preservative or preventive treatment in the oral cavity," which in a broad sense embraces not only healthy mucous membrane and teeth free from caries, but also the normal eruption of the teeth resulting in normal occlusion; which means that all the teeth in one jaw are occluding with

the teeth in the opposing jaw, so as to furnish the largest area of grinding surface. The cusps, the incline planes, and the sulci into which they fit should combine to furnish the owner with the best masticating apparatus, and should form dental arches which in regard to strength and durability cannot otherwise be equaled. The cusps of all the grinding teeth in such arches, interlocking with their antagonists, prevent these teeth from any variation in position either bucco-lingually or mesio-distally, provided that an harmonious pressure be exerted by the tongue, cheeks and lips. This regularity of the teeth in normal arches is also one of the chief factors in their resistance to decay, and to disease of the surrounding tissues, for the teeth, if they are properly formed, are in a position to be as nearly self-cleansing as possible.

In order to fully appreciate normal occlusion, the arrangement of the lingual cusps should be carefully examined. This is only possible with either models or skulls, and in examining, careful attention must be paid to the mesio-lingual cusp of the upper first permanent molar. If the molars are in normal relation to each other this cusp will fit, and practically fill the mortar formed by the cusps of the lower first permanent molar, acting like a pestle as t were. In this mortar all excessively hard substances are placed for grinding. It should also be noted that a slight rotation of the upper first permanent molar, not readily noticeable from the buccal side is sufficient to disarrange this wonderful grinding apparatus to a marked degree. In the normal buccal arrangement the mesio-buccal cusp of the upper first permanent molar is occluding with the mesial and distal buccal cusps of the lower first permanent molar on the same side. Further note in this examination from the lingual side that when the lower teeth are all distal the width of one bicuspid, or mesial the width of one bicuspid, the relation of the lingual cusps of the upper teeth to those of the lower is never such as to enable the owner to properly masticate his food, altho very often the interdigitation of the buccal cusps seem very good."

For us to be able to show results that will favorably compare with the ones alluded to it becomes necessary that treatment be begun prior to or during the eruption of the permanent teeth.

The deciduous teeth are twenty in number and should be all erupted by the third year after birth. These teeth are found to be as a rule, in contact with each other, and in the great majority of cases to occlude properly.

That malocclusions develop, must be due to either internal or external disturbances, and just in proportion as we are able to definitely determine what these disturbances are, so will we be able to intelligently treat them.

Owing to the fact that the permanent teeth are far more often found in malocclusion than those of the deciduous set, must prove that this condition is due far more to external than to internal causes.

The principle causes of malocclusion may be set down as follows:

Abnormal tissues in the oral cavity and adjoining parts.

Loss of tooth material.

Mechanical.

Disuse.

Habits.

Observation has convinced your essayist that the two latter are the most important for our careful consideration.

For generations our foods have been so prepared that little or no mastication is necessary in order for the palate to be tickled and the food swallowed. The result of this very limited use of the muscles of mastication is lack of normal stimulation of the tissues surrounding the teeth, lack of flow of blood, and lack of normal resorption of the roots of the deciduous teeth.

Just how far this may be responsible for the various habits of childhood is very difficult to say but it is a well recognized fact that many of our perplexing cases of malocclusion will be eventually found to be caused by some habit, often very difficult to detect.

It would be well for every one treating malocclusion to instruct his chair assistant to carefully observe the patient whenever in the office and report any peculiarities that she may observe. In this way it is not infrequent to detect habits that would otherwise not be observed.

When the diciduous teeth are found to be in malocclusion to a marked degree, it is of the utmost importance that correction should be instituted as early as conditions will permit. The longer such cases are allowed to go untreated the greater the difficulties encountered, and the less certain the final result. Believing that normal function is of the utmost importance in the development of the dental arches and masticating apparatus, then what can be more logical than that we established such relations as early in life as possible so as to permit the teeth of the deciduous set to occlude properly.

If you will concede that the histologists have proven that bone is developed in accordance with mechanical stimuli, then it is most logical that you concede that when the deciduous teeth are in such relation that normal function is interfered with, normal development is impossible.

The mandible is a movable bone and close observers are convinced that the child unconsciously shifts the mandible mesially, distally or to either side, to get the teeth in the position to best masticate food. This position if abnormal and allowed to continue, brings improper muscular force and necessarily improper development.

It therefore becomes the duty of every dentist conducting a family practice to send for the children of three years or older of the parents under his care, and carefully examine their mouths. All carious places should be attended to and if the teeth do not occlude properly they should be made to do so either by himself or one competent to render such treatment. The dentist would best serve his clientele who would take accurate impressions of all such cases, and repeat this every year, and from these make models, so that the relations which the teeth in one dental arch bear to those in the opposing dental arch can be studied from the lingual as well as the buccal view. A collection of such models carefully kept by every dentist would in time prove a wonderful source from which to record indisputable facts.

By the time the first permanent molars erupt there should be room enough between the deciduous cuspids to accommodate the four permanent incisors if normal development is taking place. Where nature fails in this it is advisable by mechanical means to stimulate such development and where done at the proper age, all appliances can be removed as soon as all the incisor teeth have taken or been guided into their proper places and the child permitted to enjoy a period of several months and sometimes years without appliances.

It is not to be inferred from the above that children object to wearing modern orthodontic appliances properly constructed. It is not unusual for them to exclaim when the appliance has been removed,—"Oh! I don't like the feel of that. Won't you put it back?" If the mother is present and you observe her closely you will note a surprised expression steal over her face.

The object then of removing appliances whenever possible is to permit uninterrupted development as much as possible in these young patients and also to facilitate proper cleansing of the teeth for it must be admitted that any mechanical addition to the oral cavity

renders this important process more difficult.

Failure to properly provide space for the erupting incisors, in the opinion of the writer, is often responsible for various habits of childhood, owing to the reflex disturbance. When we consider the reflex disturbance caused by an impacted third molar, is it not logical to expect greater reflex disturbance where a number of teeth are impacted? It is not infrequent to have children ask to have the lingual wire pinched so as to cause it to exert pressure on the remaining deciduous teeth, and to state that the mouth feels more comfortable after the wire is pinched than formerly. This of course implies that too much force is not exerted at any one time. Every close observer will note that children are more prone to habit spasm than adults. Orthodontic appliances may also be responsible for various habits. It therefore behooves you to see to it that children under your care are subjected to as little annoyance as possible during the period the permament teeth are erupting. All appliances should be as delicate and as staple as possible, for the more continuous the pressure if properly applied, the less annoyance to the patient.

This necessitates that only fixed appliances should be used, and by fixed appliances is meant, appliances so constructed that the child cannot remove them from the mouth and replace them. Believing that it is impossible for anyone to construct an orthodontic appliance of any description that will not cause any inconvenience when placed in the child's mouth, then it would seem absurd to expect him not to remove the inconvenience when it lies within his power to do so.

Fixed appliances can be constructed so delicate and yet so staple that the annoyance caused by them is so slight that it entirely subsides in a very short time.

From the completion of the eruption of the incisors which is usually in the ninth year until the eruption of the remaining permanent teeth, there is a lapse of a year or more, and it is during this period that the child should be free from all mechanical disturbances. He should be kept under observation, however, owing to the variation in time of eruption of these teeth, and also to the possibility of their requiring attention. Any of the twelve permanent teeth that replace the deciduous cuspids and molars may require guiding into their proper positions. This may necessitate the readjustment of appliances, and it should be done without delay so that the erupting tooth be guided to position and frequently rotated as well. In all such work it should be borne in mind that nothing should be done that would tend to prevent eruption.

Bands can be adjusted and cemented on bicuspid teeth as soon as both cusps are thru the gum without causing any annoyance to the patient if the proper technic is followed. And it has been found that such teeth can be rotated in a few weeks, and if held in their proper positions until in the full eruption that they will remain.

Experience has shown that it is not unusual to find one or more bicuspids congenitally absent. The first bicuspids occasionally and the second bicuspids much more frequently. In the writer's collection of models the following teeth have been found missing, in the following proportion.

One upper lateral, two cases.

Two upper laterals, four cases.

One upper first bicuspid, one (In a case with three second bicuspids missing).

Two upper first bicuspids, one (In a case with seven bicuspids missing).

One upper second bicuspid, one case.

Two upper second bicuspids, two cases.

Upper second bicuspid in conjunction with upper first bicuspid, two cases.

Two upper second molars, one case.

One lower central, two cases.

Two lower centrals, one case.

One lower lateral, and the lower centrals, one case.

One lower lateral, one case.

Two lower laterals, none.

One lower first bicuspid, one (In a case with six other bicuspids missing).

Two lower first bicuspids, none.

One lower second bicuspid, one case.

Two lower second bicuspids, seven cases.

Two lower second molars, one case.

The above shows the necessity of having X-ray pictures made to make sure that there is a permanent tooth to replace the deciduous one, before referring patients with deciduous molars firmly fixed to the exodontist.

It has been noted that many of the second deciduous molars become wedged between the first bicuspid and first molar and prevent the eruption of the underlying permanent tooth, in one case observed by the writer as late as the 26th year. It has been further noted that the retention of these deciduous molars is a menace to the mesial surface of the first permanent molar, owing to the broad contact formed rendering proper cleansing of this surface very difficult, resulting frequently in caries. As these bicuspids have always been found to erupt unaided within a few months after the removal of the deciduous molars if done not later than the 12th year, it would seem there can be no objection to their removal when the X-ray shows the presence of a permanent tooth to replace the deciduous one.

According to Black's Dental Anatomy, the mesio-distal diameter of the crown of the upper second deciduous molar averages .32 of an inch, while the second bicuspid which replaces it averages but .26 of an inch in like diameter. The mesio-distal diameter of the crown of the lower second deciduous molars average .38 of an inch, while the second bicuspid which replaces them average but .28 of an inch in like diameter.

From this you would naturally infer that where these deciduous molars were not prematurely lost either in whole or in part that the bicuspid should erupt in proper position. Observation has proved that a large per cent. of the second bicuspids, both upper and lower, but more of the lower than of the upper present thru the gums rotated to a marked degree. The reason for this is difficult to state but it would seem that it was due very largely to lack of normal resorption of the roots of the deciduous tooth that it replaces.

The erupting tooth follows the course of least resistance and may be deflected either buccally or lingually or maybe caused to rotate. This, however, cannot be entirely responsible for rotated second bicuspids as several have been observed to present rotated a complete half turn, or so that the buccal and lingual cusps are transposed as to position. Such teeth if banded as soon as both cusps are thru the gum, can be rotated without any difficulty.

It is not to be assumed from the preceding that it is impossible to render orthodontic service or rotate teeth after full eruption has taken place, for many cases could be shown to disprove this, but when we have in mind that in order to move a tooth that we must by pressure of some sort induce resorption of bone and that we must wait not only for new bone to form but often for years in order to make sure that the teeth will remain in their new positions, does it not seem absurd to expect as good results as when treated during normal time of eruption? The force required to properly place erupting teeth if measurable, might be put at ounces, while that required to move fully erupted teeth might be placed at tons.

It has been the writer's experience that the finished cases that more closely conform to normal occlusion were all started prior to or shortly after the beginning of the eruption of the permanent teeth.

Discussions.

E. A. R. Torsch, D. D. S., Louisville, Kentucky.

Mr. Chairman, Doctor Young, Ladies and Gentlemen:

I do not know why they selected me for the purpose of inflicting punishment on you folks when I have already been doing it by correspondence, and now I am invited to continue by word of mouth.

I enjoyed to the fullest extent Doctor Young's paper and his illustrations of the splendid work that he has accomplished. The title of his paper was just a little bit buoyant, a little bit enthusiastic; it gives us just a thrill when we think of the prevention of malocclusion. We all, I suppose, when we saw that title swallowed a little faster, our heart beat a little faster. I would not be here at all to discuss it if it were not that I do believe that we should have a few words from the standpoint of the general practitioner on the matter of the prevention of malocclusion.

I believe that Doctor Young is absolutely right when he speaks of the obligation of the general practitioner in the early recognition of malocclusion, and still more so when he urges the dentist to see the young patients before the age of three years, or thereabouts. I believe that we who follow general practice, if we would insist upon becoming actually the family dentist, should take upon ourselves the obligation that comes with such a distinction and such a service, and carry out that obligation to the fullest extent in that we should insist upon the children being brought to us for our advice and our instructions; and that we should be able to insist upon the carrying out of these instructions to the limit, and in that way we would be in large measure able to prevent many of the terrible conditions that we see every day in our practice. If we do not do that we miss a wonderful opportunity; and yet in our busy office practice we do not seem to have the time for all of these things that we ought to do, and perhaps without taking sufficient thought we neglect a very important duty that we must perform, namely, the instruction of the mothers in the care for and watchfulness over the children's teeth.

We ought to be sponsors for the diet of the children to a large extent; we ought to insist upon the parents prescribing that diet for the child which would involve mastication, which would involve the exercise of the muscles of mastication so that the fullest development could take place.

I sometimes wonder whether the matter of malocclusion is not summed up in the question of the acorn and the oak; which was first, the acorn, or the oak? Which was first, malocclusion, or faulty mastication? I am old-fashioned enough to believe that if we could prescribe the proper kind of diet that would furnish the proper exercise for the muscles of mastication, and if our prescription could be carried out, we would have beauty instead of deformity and all of our malocclusion would be prevented. If we could achieve the prevention of this most terrible blight upon childhood, malocclusion, it would stamp us as deserving the most glorious commendation and would make our professional standing more laudable in the sight of man and God.

If we as general practitioners will devote ourselves to the early recognition of the slightest thing that deviates from that very beautiful perfection which Doctor Young has described; if we would early recognize that and set ourselves to the correction of it, we will ren-

der a service worthy of our dignified calling.

We must exercise early observation as to the growths in the oral cavity and in the adjacent tissues; we must be quick to seek the elimination of all that which would tend to the disuse of the teeth, as I have already touched upon. We should closely notice habits that are forming; and by careful nursing, by engaging the child in conversation, we can frequently extract from the child the facts that we had only imagined previous to that time might exist. By careful attention to these matters we may remedy or prevent the occurrence of a condition that would result in more or less permanent malocclusion later in life. The general practitioner will have brought to his attention cases of missing teeth, as Doctor Young has stressed; and in my own observation I have had several cases of mistaken judgment where it was thought simply because the tooth was not there, say in the case of a central incisor not being there at the age of twelve or fourteen, that it was not going to be there at all. Without an X-ray picture or without making further examination a bridge might be put into the child's mouth covering the space which should be taken by the central incisor, only to realize after a few years that there was pressure there, and upon examination discover the tooth in its proper place, when the bridge would be removed and the tooth finally drawn into its position, the appearance thus being much improved.

We should be very careful in diagnosing any case of supposed missing teeth to use the X-ray, and determine the actual conditions; and if malocclusion is present the best service that the general practitioner can render his patient if he himself does not feel fully competent to handle the situation is to refer that patient to a specialist who is giving his entire time to this work.

I believe that in our multiplicity of duties as general practitioners we cannot render the little patients that are entrusted to our care the proper service when our attention is so fully occupied in selecting cements, porcelains, inlays, crowns, bridges, and dentures generally. It is almost impossible to be able to carry all these things in one mind and at the same time give proper attention to the growing children. I believe that we will do the best service to our patients by referring them to the proper men.

I want to express my very deep appreciation to Doctor Young for presenting to us this subject in such a lucid and instructive manner.

O. H. McCarty, D. D. S., Tulsa, Oklahoma.

Mr. Chairman, Ladies and Gentlemen:

It is not easy to discuss Doctor Young's paper when he has so thoroly covered the field; but there are two or three little things that I want to call your attention to wherein I take issue with Dr. Young to a certain extent in his etiology of malocclusion, particularly in his laying stress so largely upon habits and disuse as being the real causes of the great proportion of malocclusions. I have found in the great majority of my cases—which are few of course—that the premature extraction of the baby teeth has been more largely the cause of malocclusion than any other one thing. That has been my particular experience, and that is the only point in this paper upon which I can take issue with Doctor Young.

The general practitioner should give more time to the study of his little patients who come to him for advice. You should not slight or pass over these troubles lightly, but take them up as you would want your own children to be cared for if you were sending them to a specialist, or to an eye, ear, nose or throat man. If you do not care to handle these cases, frankly say so, and refer

them to some one who is making such work a specialty.

The best way to really discuss Doctor Young's paper is to re-read it.

I think that is about all I would care to say. (Applause.)

H. A. PULLEN, D. D. S., Buffalo, New York.

Mr. Chairman, Ladies and Gentlemen:

I am very sorry that I shall not be able to give you any discussion that is worth while of this paper. In the first place, it was handed me such a short time ago that I have not had an opportunity to thoroly read it. I am, however, in hearty accord with all of the ideas expressed by the essayist in regard to the prevention of malocclusion.

As I said before, I have not read the paper sufficiently thoroly to be able to formulate a logical discussion, and I hope you will excuse me if I do not present a discussion at this time.

C. S. CASE, D. D. S., M. D., Chicago, Illinois.

I did not come here with any expectation of discussing Doctor Young's paper. I am pleased to say that with almost all the views which Dr. Young presented, I am heartily in accord.

In regard to the care and treatment of children's teeth, the gentleman who opened the discussion, struck the right note when he said that parents should be informed as soon as possible in regard to every local tendency toward malocclusion of the permanent teeth. My practice, for a great many years,—and one that I believe all dentists should follow—has been to persuade the parents of my patients to bring their little ones to me for examination, especially during the time of secondary dentition, that I may have an opportunity to direct them in regard to the care of the deciduous teeth, particularly with a view to avoid premature extraction. Dr. Young did not oppose the idea, as one of the speakers seems to have thought, that that was not one of the causes of malocclusion. I think that Dr. Young will agree that one of the main causes of malocclusion of the teeth, is the premature extraction of the deciduous teeth; and that this is largely due to the anxiety of the parents, who fear that the permanent teeth will be irregular. So many dentists are also imperfectly informed in regard to the natural processes of secondary dentition, that many cases of pronounced malocclusion are caused by their malpractice alone.

In a very large proportion of cases of young children that would be regarded by a novice as imperitively demanding treatment, if nature is allowed to follow the natural course of dentition without interference, perfect dentures result, These are the forces which have been bringing about normal dentures for hundreds of thousands of years. On the other hand, there are many instances which do demand the assistance of the orthodontist, and for which the light delicate forces of appliances similar to those which Dr. Young has shown are of the greatest importance. But do not imagine every time you see arches which are too narrow for the erupting incisors, that they demand expanding, for that is one of the common normal conditions.

In some of the cases that were shown on the screen, the conditions were caused by premature loss of deciduous teeth, whereby nature was robbed of one of her greatest forces for the natural growth expansion of the arches that would have permitted the normal eruption of the permanent teeth. These instances of course demand treatment with the view of keeping the spaces open, etc.

There is one feature of the early correction of children's teeth that I would like to refer to, tho it is such a big subject that I can give it no more than a cursory glance. It has reference to a teaching which has followed in the wake of the dogmatic teaching: that all dentures should be placed in normal occlusion

whatever their condition or causes. It asserts that whenever the first permanent molars are found to have erupted in disto-mesial malocclusion, they should invariably be placed in normal relation so that succeeding erupting teeth may be guided by these piers to a normal occlusion of the dentures. This would most certainly be true if nature's design for each individual case was a harmonious one, which would imply that every irregularity must arise from some local cause, as many teach, and as perhaps Dr. Young believes. But this is contrary to the well established laws of biology, and abundantly disproven by ethnological investigation, and too by the commonly observed admixture of inharmonious types. From this it is seen that thru some form of heredity, every possible antero-posterior malrelation of the teeth and jaws to each other and to the balance of the bones of the cranium may arise. Let us suppose that it is a case in which the child has been endowed thru one of the many forms of heredity with a decided protrusion of the upper denture and maxilla, and with the lower denture and mandible in harmony with each other and the balance of the physiognomy, the placing of the dentures in normal occlusion at whatever age would inevitably result at some time in a bimaxillary protrusion, and exactly in proportion to the original inherited malrelation.

If you believe as I do that thru the laws of heredity a very large proportion of disto-mesial malrelations of the teeth and jaws arise, I think you will hesitate before you invariably place the first permanent molars as soon as they erupt, in normal occlusion, because inherited conditions of this character are frequently not apparent before the beginning years of adolescence, and rarely take on the full inherited stamp of disharmonies before 12 or 14 years of age.

I should like to say much more upon this subject, but it leads into so much that it would be impossible to cover, especially on such a warm afternoon.

J. A. C. HOGGAN, D. D. S., Richmond, Virginia.

Of course we have all enjoyed Doctor Young's paper, which has been as frank and as lucid as his papers always are.

I should like to call your attention to one or two points that perhaps might be elaborated a little. One of them was the statement which he made that when the molars are in normal position the mesio-lingual cusp of the upper first molar will fit into the occlusal surface of the first lower molar. If you take into account the percentage of variation which must occur in the organ of the tooth as a tooth, just as it does in any other organ that God ever created, if there is anything that does vary it must be the fifth cusp which you so frequently find on the lingual surface of the mesio-lingual cusp.

Now habits carry a big load. We trade a great deal upon the load which habits carry; but I think it is something like a gentleman who was going down the corridor of one of the hotels, late at night, zig-zagging from side to side, and a friend came up to him and offered to take him to his room. He pushed the friend aside and said that he did not want any additional responsibility. I think that we very frequently are inclined to trade on the part which habits have to do with the failure of cases; and while they do cause a great deal of malocclusion, we must consider the obscure but nevertheless direct influence of the impaired function that you find associated with it in some other part of the body. It may be, as Doctor Dawson, of Springfield, Mass., pointed out, associated with the manner in which the three primitive layers are developed; but we cannot always reach some of these hidden impaired functions that are affected, such as disorders of circulation, nervous system, and nutrition.

Now the Doctor has drawn attention to the fact that we find normal occlusion very frequently in the deciduous teeth and not in the permanent teeth; or that

we find malocclusion so much more frequently in the permanent teeth; and if we stop to realize that we have at the period at which the deciduous teeth are erupting almost all of the permanent dentition, we can see that if we could have a third dentition which had the same powerful influence upon the second dentition, as does the first on the second, we might not have quite so much malocclusion in the present permanent dentition, and we cannot help but believe that on that account we must not claim too much for the normal occlusion of the deciduous dentition.

J. LOWE YOUNG, New York City.

I am glad that my paper has started up some discussion. I would not have felt very much pleased if nobody had had anything to say on it. One of the discussers stated that I said nothing about the loss of deciduous teeth. I did not dwell on that, partly because I did not want to make my paper too long, but it was covered in the clause "loss of tooth material" which included that as well as mechanical causes.

The more I practice orthodontia the more I am convinced that proper foods supplied to patients at the proper age, the developmental age, have a great deal to do with obviating the necessity of wearing an orthodontial appliance.

Doctor Case presumed that I did not believe that heredity had anything to do with malocclusion. He shot very far of the mark, for I am absolutely convinced that heredity plays its part in malocclusion the same as in any other bodily conditions; but how much we know about it I think is another question. Personally, I am convinced that I know very little about just how heredity does work in. On the other hand, I am also convinced that cases such as Doctor Case has cited are very few indeed provided treatment is begun early enough in life. I have not had to encounter a patient in eleven years of exclusive practice of orthodontia with whom I have not been able to get a result that has been agreeable to me and also to the parents, both from the standpoint of occlusion and facial lines, if taken sufficiently early in life, say six or seven years of age. If we wait until all the permanent teeth have erupted and are surrounded by bone, then it is an entirely different problem from that wherein we work in harmony with nature's laws. I would be willing to challenge Doctor Case to send me a patient that he would pick out that he is convinced is going to develop thru lack of dentitial harmony a disagreeable facial appearance that he thinks it would be impossible to correct without removing the teeth—and altho he did not say that right out, I took it that that was what he meant—and I would be willing to treat any such case as that if sent to me at six or seven years of age, gratis, and leave it to a Committee of Orthodontists to decide whether the facial lines were agreeable, or not.

C. S. CASE, D. D.S., Chicago, Ill.: May I make one correction there. You have mistaken my meaning entirely. I did not say that that could not be corrected without the removal of the permanent teeth.

J. LOWE YOUNG: If the permanent teeth are not removed, you say the facial lines will not be as good as if they were removed?

C. S. CASE: Under certain circumstances, that is true. In the majority of cases, however, it is better in my opinion to wait until you can be sure they are inherited cases before you would think of extracting permanent teeth.

J. LOWE YOUNG: Doctor, let me ask you a question, when would you know that?

C. S. CASE: It is not always possible to determine inherited protrusions until after twelve years of age.

J. LOWE YOUNG: Now then, I do not believe, Doctor, you take a case seven

years of age, as soon as the first permanent molars are erupted, and they are looking wrong, that you will have that difficulty. That is my conclusion. I may be mistaken, but that is my conclusion. You made another remark, Doctor Case, that I would like to ask you about some time —you cannot take it up now I know— but I would like you to go into more detail respecting it, namely, with reference to the young children as to in what way they will correct themselves. Now I will grant you that there have been cases that may seem to be developing malocclusion that will clear up; but I have yet to see one case where a lower incisor coming rotated ever re-rotates and becomes straight. Now upper incisors will straighten up if you have good normal pressure, and your upper centrals will often correct themselves.

The best answer to that, Doctor and Ladies and Gentlemen, is the fact that if you go thru the dental profession that are gathered here in Louisville today and examine their teeth, how many of them have their lower incisors in normal position? Very, very few. You cannot say that they do not ever develop normally, because they do. I have a set of models in my office that I took just recently from a young lady of sixteen, twenty-eight beautiful permanent teeth every one of them in absolute position, not the slightest rotation of the teeth, a result better than any orthodontist ever produced, because it came about naturally.

THE PRESENT STATUS OF PORCELAIN IN DENTISTRY.

By Hugh Avary, D.D.S., San Francisco, Cal.

(Read before the National Dental Association at Its Twentieth Annual Session, Louisville, Ky., July 25-28, 1916.)

THIS paper on the present status of porcelain in dentistry is not presented to you for the purpose of emphasizing that the method herein described is the only one available for the restoration of lost tooth structure, as no one realizes as keenly as the writer does that there are cases when other materials may be indicated and should be used. However, I do wish to call your attention to the many cases where porcelain jacket crowns may be used to advantage.

The practice of dentistry consists in more than simply inserting fillings, etc., —a tooth carpenter. We have now come to realize that the health of patients often depends largely on the character of dental services that may be rendered them.

Since such eminent medical authorities as Rosenow, Mayo, Billings, and others have shown that often general toxic disorders, such as arthritis, endocarditis, neuritis, tuberculosis, etc., may be caused by small chronic foci of infection around the apices of teeth, containing dead pulp or fragments of pulp tissue, or poorly filled root canals; also from pyorrhea pockets, we should use care in selecting the material and method of restoring lost tooth structure.

The porcelain jacket crown is conceded to be ideal for several reasons, viz: It does not irritate the gingivae as most banded crowns do and it does not demand devitalization, except when the pulp is exposed, at the commencement of the operation.

On pulpless teeth it is better than a pivot crown for it permits of access to the root-canal without destroying the crown, if that procedure should be necessary in the future, without first having to remove the post from the root-canal, and by that destroying the crown as is the case with a pivot crown. With a diamond drill a Jacket Crown may be opened thru and the root-canal treated as easily as a natural tooth.

Since the radiograph has come into general use we realize more than ever the importance of preserving the vitality of the teeth whenever possible as so much trouble can be traced to poorly filled root-canals and irritation to the gingivae from poorly constructed fillings and crowns. The jacket crown has a tendency to prevent the recurrence of caries, as the entire crown of the tooth is re-enameled with porcelain and it does not irritate the gingivae. As porcelain is also a non-conductor of the thermal changes, we eliminate the danger of the death of the pulp from shock that might occur from a restoration with a metallic filling or crown. When properly made the porcelain jacket crown is ideal from the esthetic as well as from the prophylactic standpoint.

Jacket Crowns are indicated in the following cases; peg laterals, malformed or discolored teeth, when a tooth is over one-third broken down; badly eroded

teeth; deciduous teeth that may remain in adult mouth (Radiograph case and ascertain that there is not an unerupted tooth under the deciduous tooth.) Pivot crowns that are off-color or do not fit may be split off with thin carborundum stone, shoulder cut on root, impression taken and Jacket made in usual way, this eliminates the necessity of removing post from canal.

Jacket crowns may be used to advantage when opening the bite. All banded crowns that irritate the gingivae should be replaced by porcelain jacket crowns. Anterior teeth that are rotated may be corrected by jacketing. Lower incisors, when badly broken down, should be jacketed.

The porcelain jacket is the most natural looking crown and possesses the greatest degree of translucency. Individual peculiarities may also be reproduced with jacket crowns to harmonize with the natural teeth.

A vital tooth that is jacketed is much stronger than one that is devitalized; reaming out the canal for the reception of a pivot tooth materially weakens the latter; then again a post in the canal has a tendency to act as a wedge during mastication and sometimes splits the root.

In jacketing we bind the tooth together and have the strength of a Richmond crown without the irritation from a band, because the shoulder joint of the jacket crown does not impinge on the gingivae. The smallest shoulder that can be trimmed is sufficient, as the *strength of a jacket crown does not depend on the bulk of porcelain but on the close adaptation of the jacket crown.* In mastication the force is more nearly equally distributed and the root takes the strain.

The preparation of the tooth for a jacket crown is most important, for unless the proper technic is observed a successful crown will not be had. It is necessary in stripping down a vital tooth to use some means of eliminating pain. I use analgesia or local anesthesia and for the last three years I have used novocain and suprarenin in the majority of cases as the anesthesia is profound and the head can be moved in any position. The disadvantage of the nosepiece which is in the way as is sometimes the case when using N^2O and O is obviated. In a few cases of middle-aged patients where the pulp has receded, one may prepare the tooth by placing a stream of warm water on stones while grinding, but it is the exception when this procedure alone is sufficient.

If one developes the proper technic in conductive and infiltration anesthesia, it will be invaluable and we wonder how we ever made our preparation on vital teeth without it.

The next thing of importance is to use great care so the tooth will not be overheated by grinding and cause an irritation to the pulp with the possible death of the organ as the consequence. Any trouble of this kind can usually be traced to faulty technic in the preparation of the tooth or in not protecting the tooth after it is denuded of enamel and before the crown is set. Porcelain being practically a non-conductor of thermal changes, we can be assured that the pulp will not be irritated when a tooth is properly jacketed.

In preparing a tooth for jacketing the first step is to shorten the tooth about two millimeters, then with thin carborundum disks the mesial and distal sides are trimmed down to the gingivae where a slight shoulder or inset is formed. The shoulder should be at right angles to the long axis of the tooth, then the labial or buccal side, as the case may be, is stripped of enamel and a shoulder formed just under the free margin of gingivae; then the lingual side is ground, care being taken to observe the bite and allow sufficient room for the porcelain body. After the four sides are ground, in this manner, the shoulder

is sharply defined with finely cut fissure burs and small mounted stones; also with enamel chisels the shoulder is smoothed. When finished the shoulder should be just far enough under the gum to make the joint invisible, care being taken to prevent injury to the peridental membrane which is usually the case when a root is ground far under the gums to hide the cast-joint of a pivot crown, the gum being thereby subjected to undue irritation. When properly jacketed the gum tissue will be pink and healthy in appearance and the peridental membrane will not be injured. The greatest circumference of the tooth must be at the shoulder and care must be taken that there are no undercuts to prevent the accurate withdrawal of the impression; the smallest shoulder that can be trimmed is sufficient. If there are any undercuts present they may be filled with cement or a gold inlay according to the case, before attempting any impression. After the tooth is properly prepared, a copper or aluminum band is trimmed to fit the tooth snugly just under the gingivae. The band should fit one millimeter beyond the shoulder. The band is then filled with modeling compound, heated and forced to place, is chilled and withdrawn; then the margin of the impression is heated over the lamp flame and forced again to place. The cool compound will then swage the warm compound around the shoulder and a sharp accurate impression will be the result. Next a musa bite of pink paraffin and wax is taken. The tooth is then dried thoroly and a coating of varnish applied. Varnish is made by dissolving rosin in chloroform. The varnish protects the tooth and prevents absorption of any of the secretions, also prevents any irritation of the pulp from the cement. The tooth is then covered with a gutta-percha crown which keeps the gingivae packed from the shoulder and protects the tooth until the jacket crown is finished and cemented The color is selected and the patient dismissed. A cement reproduction of the tooth to be jacketed is made from a modeling compound impression of the tooth. This is tapered to simulate a root which also makes it possible to remove it from the plaster cast. Next the cement root should be treated with oil or vaseline and placed in the wax bite. Then the model is poured. Upon separating the model the cement may be easily removed and the crown can be made on the cast in the absence of the patient.

A piece .001 platinum foil is then folded around cement tooth, cut cone-shaped and a lap-joint made on lingual side. This is then tacked with a small piece of pure gold. Then place the platinum cone on root and burnish, beginning on labial and burnishing down toward shoulder and then around sides, carrying any wrinkles around to the lingual. The top should extend about one millimeter beyond the incisal end of root, this is folded over and burnished on lingual. Remove matrix and cut the foil so it extends one millimeter beyond the shoulder. Some prefer making what is known as tinner's lock joint, but personally I do not care for it, as there is double the thickness of platinum in lock joint than where single lap joint is tacked with gold.

Select the colors that will produce the desired shade; mix the porcelain to as thick a consistency as can be handled and burnish it on. The colors are applied in layers, build crown up in cast, then remove and add just a little porcelain on contact point. Sprinkle crown with a little dry porcelain powder and burnish it on. Porcelain condensed in this manner will shrink less and a good dense mass will be had when baked. With a sharp instrument cut around shoulder separating porcelain from matrix. After first bake, which should not be glazed, the jacket is tried on model, margin is reburnished and joint packed

with porcelain and crown built up if necessary; the jacket is again fired and this time glazed. With a little practice a crown may be made in two bakings. Try jacket in mouth and be sure it is satisfactory. The platinum matrix is then peeled out, tooth dried and jacket is cemented on. After cement is hard, excess may be easily broken away and bite adjusted with articulating paper.

Porcelain inlays are indicated in cavities in the anterior teeth, at the cervical, approximate and cavities involving the incisal edge, when the tooth is not one-third broken down. In cavities involving the mesial, distal and incisal angles I prefer making a jacket as the result is better for several reasons; it is stronger, the color is better, and the shrinkage is much easier controlled than in a large inlay.

If one will take the time necessary to master technic of making jacket crowns I feel confident that the result will be more than satisfactory from an esthetic as well as prophylactic standpoint to yourself and patient alike.

Discussions.

Dr. G. Walter Dittmar, Chicago, Ill.:

I think we all agree that Dr. Avary's discussion of the porcelain jacket crown is a most able one and that the technic of construction which he has given for such crowns is beautifully presented. So well indeed that it is a waste of our time for me to enlarge upon the technic which he has so clearly outlined.

Dr. Avary, however, is an enthusiast on the subject of the porcelain jacket crown and as I am not so enthusiastic there naturally are some points with which I do not entirely agree. I regret that the doctor did not discuss more fully the subject of the paper, i. e., "The Present Status of Porcelain in Dentistry." The porcelain jacket crown while an important element in this subject is by no means the only one, and tho he did mention the porcelain inlay and indicates where it should be used, he did not indicate what the present status of porcelain in dentistry is.

While I have not made extensive investigations as to this question, yet from what I gather, both porcelain jacket crowns and porcelain inlays form but a very small part of the reparative methods used at this time by the profession in general. The porcelain inlay being to a very large degree supplanted by the so-called synthetic porcelain, or silicious cements; and of the crowns that are placed, I should judge, from my investigations, tho I confess they are rather brief and not thoro, but from what I find, not one per cent. of all the crowns placed are porcelain jacket crowns.

So the presentation of this subject, by a man so thoroly enthusiastic as is Dr. Avary, is no doubt very timely, for the best reparative dentistry does demand the placing of porcelain inlays and porcelain jacket crowns. I might also add another important prosthetic production, especially from the standpoint of health and esthetics, and that is the continuous gum denture. All of these, however, are unpopular at this time principally, I believe, because of the special skill, extra time, and comparative larger fee required for this class of work.

Synthetic porcelain or silicious cements, of the best kinds, in the hands of the average operator give far more beautiful results as far as esthetic reparative dentistry is concerned than does the use of porcelain inlays. It is only the superskilled porcelain inlay artist that produces an occasional inlay that is really perfect in fit, form and colors. This same statement applies, when it comes to making porcelain jacket crowns or porcelain continuous gum dentures. This may be a rather sad commentary on the status of porcelain as well as the status of the profession at this time, but the use of the gold inlay, in combination with synthetic porcelain, for large angle restorations, in any visible position,

gives strong and beautifully esthetic results.

Protesyn used on the labial and buccal surfaces of artificial dentures—gold, aluminum or vulcanite,—gives more beautiful esthetic effects than does a porcelain continuous gum denture.

And the unpopularity of the porcelain jacket crowns is evidenced by the few that are made, because of the difficulty of proper preparation of the teeth to receive them, the time and special skill required and the uncertainty in the finished product as to size, form, color and fit.

In my opinion, however, porcelain inlays should be used much more than they are at present, especially in the larger proximal cavities in the anterior teeth which do not require the restoration of an angle; so that good, hard, smooth contact points can be made which will be permanent if the inlay is well anchored. Angle restorations can, of course, be made, if conditions such as occlusion, etc., are favorable, otherwise the gold inlay made of Ney's Oro Casting gold with a properly constructed veneer of synthetic porcelain gives stronger and more beautiful results; but the point I wish to make is, to form a *contact point* of something that is *hard* and *smooth* and *reasonably permanent.*

Continuous gum dentures should be used more than they are; for a well made porcelain continuous gum denture represents the acme of dental prosthetic creation; it is far more sanitary than any other form of artificial denture. And no doubt porcelain jacket crowns should also be used much more than they are.

However, I cannot see the necessity of resorting to the lengthy technic of constructing jacket crowns with the more or less questionable results as to shade, fit and form, to replace dowell crowns which have failed; or even to crown teeth with strong roots that are pulpless; for dowell crowns can be made just as perfect a fit at the gingival end, just as non-irritating to the tissues and just as esthetic as to form, shade and individual peculiarities (by grinding, polishing and staining), just as translucent, and more so, in some instances, and for badly broken down teeth, just as strong as any jacket crown; but for the other places the doctor suggests where a vital, healthy pulp occupies the pulp chamber; there a porcelain jacket crown, if conditions are otherwise favorable, is certainly indicated. And while the porcelain jacket crown is indeed a very strong crown, so strong when properly made and well cemented to the root that it will withstand unbelievable abuse. This reminds me of a remarkable demonstration made by Dr. A. E. Schneider, of Chicago, before the Illinois State Dental Society clinic some eight years ago. Dr. Schneider prepared the end of a large iron nail exactly as he prepared the cone for the reception of a jacket crown, constructed the porcelain jacket (an incisor), employing practically the same technic for practical cases that Dr. Avary described today, (using S. S. W. 2560′ porcelain), cemented the jacket crown to its position on the spike, and with a heavy hammer, with vigorous blows drove the crown and spike thru several inches of hard resinous pine wood; he would split off the pine block and then drive it thru another heavy board, repeating this with other spikes similarly prepared with jacket crowns and they withstood these severe tests.

There is no question about their strength when made of high fusing porcelain, properly baked and securely cemented to the dentin cone. The dentin and hard adhesive cement supports the frail porcelain veneer and when united will resist direct stress. But that this frail jacket of porcelain will "bind the tooth together and that the strength of a jacket crown does not depend on the bulk of porcelain, but on the close adaptation of the jacket crown" (quotation

from Dr. Avary's paper) is, I believe, a wrong conclusion. A jacket crown is indeed so frail that considerable care must be exercised when cementing it to position that it is not fractured, but when properly cemented and supported by the dentin and hard cement, as I have stated before, it is a strong crown.

A technic which is used by some and with very excellent results was suggested by Dr. E. B. Spaulding, of Detroit, Michigan. The technic up to the placing of the porcelain on to the platinum matrix cone is practically the same as described by the essayist; but to insure the correct size, form and approximate shade Dr. Spaulding would take a vulcanite tooth or a porcelain facing and grind out the lingual portion until he secured the proper alignment, then the proximal, lingual and gingival portions were supplied by baking on porcelain which would unite with the veneer facing. The platinum matrix is then removed. For those not experienced in carving porcelain, mixing shades, etc., this method is more likely to give passable results, but it is claimed the other form, or full baked jacket, is a stronger crown. I cannot refrain from again mentioning the name of Dr. A. E. Schneider, this gentleman has, I believe, done more really scientific investigating along the subject of the porcelain jacket crown than any other dentist.

By the way, Dr. Schneider has coined two new names in connection with this form of crown which are unquestionably most fitting; he terms the crown the "porcelain veneer crown, and the cone shaped formation of the prepared tooth the "veneer cone." From him I obtained several very valuable and most rational suggestions. The first is to prepare the copper or aluminum band for taking the impression of the prepared cone before preparing the shoulder around the gingival periphery of the tooth. After the band is very carefully fitted, fill with a good modeling compound and lay aside; then proceed with making the shoulder and finish the veneer cone; now take the impression.

Second, carry the shoulder well under the free gingiva, that the joint will be well protected, not of course that it impinges upon the peridental membrane, but that it is well covered by the gum.

Third, after carefully studying the direction of forces which will be applied to the finished crown, proceed to prepare the incisal end or occlusal end of the "veneer cone" which in a vital tooth is all or mostly dentin, so that the incisal or occlusal preparation and also the shoulder at the gingival will be at *right angles* to the *force of occlusion* and mastication, not necessarily at right angles to the long axis of the tooth.

Fourth, in preparing a bicuspid or molar for a porcelain veneer crown, instead of grinding the occlusal end flat and at right angles to the long axis of the tooth, be sure to simply grind off the shape of the enamel following the dento-enamel outline, however, grinding off more of the occlusal and gingival parts to insure strength, so that when an upper bicuspid, for instance, is prepared, the veneer cone will have a *bicuspid formation* tho the axial walls are straight and converge. The veneer crown, when placed, will thus have the support of the bicuspid formation of the dentin veneer cone, so that when the forces are imposed upon the crown from the opposing cusps in masticating, the form of the veneer cone will support the crown, just as the dentin formation supports the enamel of the natural tooth.

Dr. J. F. Biddle, Pittsburgh.

The esthetic and prophylactic features of a well constructed jacket crown make it an ideal means of restoration in many cases, but one should not let his enthusiasm for it overbalance his judgment and resort to its use indiscriminately. The removal of the pulp in teeth where a jacket crown may be successfully employed should no longer be dreaded

since the advent of the X-ray machine, for 99 per cent. of such cases have roots which may be successfully treated, and filled to the apex, the successive operations being verified by means of the radiographs. In many of these cases I should prefer to remove the pulp, fill the canal and then insert the jacket crown, if it be indicated. I have seen several cases of extensive abscesses, involving the general health of the patient due to the indiscriminate insertion of jacket crowns, the aim being the preservation of the pulp, but exactly the opposite results followed.

We will, I believe, all agree that the jacket crown has its place in dentistry and so far as we are able to see at the present time, there will always be a place where its use is indicated, but I believe our essayist is over enthusiastic when he includes all teeth more than one-third broken down and for all crowns which are off color, or fit improperly and have posts cemented in canal. What's the matter with securing a new crown of the correct shade, or if this be not possible, of as nearly the correct shade as the manufacturer produces, staining same with mineral stains or china paints to match the approximating teeth? The essayist further states that all banded crowns that irritate the gingivae should be replaced with porcelain jacket crowns. In the first place many of the banded crowns should never have been inserted, and I see no reason for the extra labor of making a jacket crown when the root is already prepared for a crown which may be inserted without a band, and if skilfully constructed, should not irritate the gingivae.

The essayist says that the strength of a porcelain jacket crown does not depend upon the bulk of the porcelain, but upon the close adaptation of the crown. I think he should have gone a step further and given the all important point in the strength of a porcelain crown or inlay, namely, the proper baking of the porcelain to secure the maximum strength, for a porcelain restoration will very frequently withstand the stress of mastication as well as a gold or amalgam restoration if the porcelain be properly baked.

The essayist is to be congratulated upon the minute and very satisfactory manner in which he has described the preparation of the tooth and the construction of the crown.

DR. HUGH AVARY (closing): I have only a few brief words. I think some points in my paper were misunderstood. I do not mean that gold fillings should be removed and replaced by porcelain jacket crowns, but there are places where jacket crowns can be used to advantage, where it makes a better, cleaner crown.

ESSENTIALS FOR THE SUCCESS OF THE PROGRESSIVE CLINIC PLAN.

By Weston A. Price, M. S., D. D. S., Cleveland, Ohio.

(Read before the National Dental Association at Its Twentieth Annual Session, Louisville, Ky., July 25-28, 1916.)

THE purpose, as well as the advantage of the Progressive Clinic, may be summed up in two words: Efficiency and Proficiency, for by this method, more people can receive the clinical message in its complete form, in a given time, than by any previous method. The key note is system, and no society, or committee, will successfully conduct a progressive clinic, that has not learned to be systematic with its time. We would urge that no society try it, that is used to conducting its meetings by starting sessions from one-half to one hour after the time called on the program, or that is used to securing the tables for clinicians or making the arrangements for the clinic room within an hour of the time for the clinic, much less an hour after that time. We have seen the Progressive Clinic Plan fail completely, or partially, on this account, when the facts were that the officers and the society attempting to use it had disgracefully failed in their effort to utilize it. This problem of exactness and promptness relates as definitely to the clinicians as to the officers of the society, and no progressive clinic will succeed where the clinicians think they can come wandering in an hour after the time set for the march to begin, nor even one minute after.

To insure the clinicians being on time, it is our practice to assign one man the day before, with police power, to be responsible for one of the clinicians. He takes him to breakfast, drag him away from all who would stop him to ask him questions, and in a kindly way insists upon his accompanying him to his theatre of action, at least five minutes before the starting gong. This man is also detailed to furnish that clinician with everything he shall need that he does not have with him.

The members of the audience must be in places on time, and it is a disgrace to any society to keep its members at a smoker, or any meeting or social gathering, until one o'clock the night before and then have them come wandering in at ten or eleven to the morning clinic, due to begin at nine. It cannot be done that way. We must have system with our play as much as with our work. The audience must be in position to a man at the time the beginning gong rings, and those who are not present should be treated as they would be at the theatre when they go late, namely, be required to wait outside and enter only between acts. They will greatly disturb by entering their classes during a clinic lecture and saying "Good Day" to the men present, usually including the lecturer. If the bill as announced is as commanding as it may be, and the members of the audience know that systematic promptness will be observed, they will be on time.

One of the unexpected difficulties

that frequently arises is the confusion incident to the big rush for the tickets a few minutes before the clinics are to start, and only one man perhaps having charge of the tickets which admit to the classes. This can all be obviated by giving the men their clinic tickets at the time of registration, with the privilege of exchange or adjustment by the committee at any time prior to ten minutes before the beginning of the Progressive Clinic. To secure uniformity in the size of the classes, which is very important, the numbers admitting to classes should be printed in strips, perforated between, and torn off as required. The strips will be assembled as leaves into books. Each class should have a letter. A convenient arrangement of these books is the following: Let us suppose there are ten clinicians, therefore, ten classes. Each clinician is arbitrarily given a letter, of A or B to J inclusive. The book of tickets would carry on each page ten tickets and the stub. Each ticket, from the stub out, would have in succession the letters A to J, and in addition a numeral which would be the same on each ticket on that page. Thus the first page of the first book would have A1, B1, C1, etc., to J1; second page A2, B2, C2 to J2, etc.; and so on to A100 or A300, with about ten leaves to each book, thus each book represents 100 persons, ten in each class. Each stub will carry the numbers 1 to 10, 11 to 20, etc. In this way the clinic book shows at a glance, exactly how many there are in each class, whether they have exactly the same number, and the total number in all the classes. Three or four people can be handing out tickets at the same time, provided the books are given them, so that the numbers will be used up in the proper order.

Granted a good audience, present on time, a technician in place, the next fundamental requisite is that the clinician shall have a worthy message, and be competent to enthuse his audience with it, for the full time required and allotted for the progression. Many have thought they could take the Progressive Clinic Plan and run it with a group of such simple clinics as were current at the average convention, fifteen years ago, such as a "quick method for making a seamless gold crown, anchorage pins, or an amalgam filling," or such things as could be completely comprehended at a moment's glance. If this is the only kind of material that is available for clinicians, it becomes necessary to put half a dozen of them in each clinic. We would urge that every society that cannot furnish men with a worthy message, and competent to hold their audience, should import talent, if they are going to use the Progressive Clinic Plan. Every class should have a captain, who should receive a written detailed copy of instructions from the Chairman at least a week before the convention, which instructions will be reviewed by all the captains and the master of the clinics, at least a day before the clinic. The captains must see that progressions are made promptly, and also see that the rules of the clinic are observed. Under no circumstances should men who want to get away from the convention early, be allowed to run from clinic to clinic to see what they can at a glance. It not only destroys the first requisite, namely, order, but the man thinking he is getting the message is entirely mistaken, for he cannot hear a fifteen minute lecture by peeking in the door for three minutes. Do not allow it. Clinicians should be thoroly instructed as to the length of time they shall be required to hold their audiences, and they must plan to use all that time effectively and be completed when that time is up.

The bedrooms of an ordinary hotel make ideal clinic rooms. Have the beds and furnishings removed, temporarily, and these rooms can be the same rooms that have been engaged by members of the society. Have the progression go along the hall in one direction only, and

pass down, or up, to another floor for the return trip, so two crowds cannot meet going in opposite directions.

This kind of a clinic is hard work for clinicians, since they have to give ten lectures, more or less, each fifteen to thirty minutes long and almost without stopping. The latter length is very unwise. Either have the Progressive Clinics on two different days, requiring the men to keep the same numbers, and thus see half the clinics on each of the two days, or lessen the number of clinics and, therefore the number of progressions, or lessen the period of time. Eighteen to twenty minutes is about long enough for the audience to concentrate. The same purpose will be accomplished by having the clinicians progress and the audience remain still, except that the exercise of moving from one room to another greatly assists the audience in concentrating for an intensive lecture. When the audiences are very large, it is probably better to progress the lecturer and his equipment, rather than the audience.

We would strongly urge that societies plan to pay for the transportation, and also for the time, of worthy competent men, even if it must be done at the sacrifice of the free entertainment features, for the art and science of dentistry are becoming so exacting that only a few are masters, and they are overworked. In closing we cannot do better than to repeat nine practical advantages that we cited when we first gave this plan to the dental profession, in a report of its initiation before the Northern Ohio Dental Association, under the direction of the writer, in June, 1912. These are as follows:

1. Each class member can see each clinic from beginning to end, but only for his full share of time.

2. Each clinician has a full audience at all times, and can tell each and every man his full story, and never repeat to a single one. He can plan his time to cover his ground, and place emphasis where he sees fit.

3. Each clinician has an opportunity to rest for a few minutes at regular intervals.

4. Obtrusiveness in, and crowding of, a popular clinic are entirely prevented.

5. Practitioners get into ruts, and often wish to stay there. They may not choose or desire to see strictly educational clinics, but select only those that show short cuts to earning a dollar. With this method, men unconsciously get broadened, thus being more greatly benefited than by the purely practical clinic that appeals to their narrow interest or pertains to their specialty.

6. Argument and discussion with clinicians, and interruption are entirely prevented.

7. Visiting in the clinic room is practically prevented, except during progressions.

8. Every man has an equal opportunity to see and learn everything in the entire clinic with the greatest possible convenience and comfort to the clinician and himself.

9. This plan is a great incentive for clinicians to make a worthy preparation, and they will feel it an honor to be called upon as a star clinician.

The following few words will perhaps summarize the Progressive Clinic:

Promptness plus dispatch, plus efficiency, equals proficiency.

Discussions.

Dr. F. O. Hetrick, Ottawa, Kansas.

Mr. Chairman and Gentlemen of the Section:

This paper was placed in my hands since coming into the room and I have had but little time to prepare a discussion upon it. Whatever Dr. Price has to say upon the progressive clinic or methods of conducting it might well be con-

sidered a text book on the subject for he was the father of this form of clinic. Environmental conditions might materially change the method of carrying on a progressive clinic; yet it will not change two fundamental ideas that lead to the establishment of this form of clinic.

First to eliminate the "Game Hog" of the dental society. Did you ever meet one? Did you ever see him at the old fashioned clinic, get on the shoulder of either the operator or the patient and stick so tight that you could not pry him loose with a crow bar? Second was to give every man who wanted to see or hear an equal chance so that the greatest number could get the greatest good out of the clinic.

Out in our state (Kansas) and at the meeting of the National in Kansas City, Mo., we found that in the large halls we had to use, that the best way to conduct our progressive clinics, was to build a system of booths thru the center of the room, one set of booths backed against the other. This does not make it hard for the clinicians to move, as they just step along to the next booth. I want to emphasize the fact of the policeman for each booth being absolutely essential. I remember one day out in Kansas when my good friend, Dr. Crise wanted to ask some one a question, he came up to the booth where this man was sitting listening to the lecture and motioned him to come out. Well he did not come out, for we shooed Dr. Crise away. We do not have that trouble any more for we have the policeman. He must have definite lines to hew to and show no favors. You do not get anything in dentistry or anywhere else in the world that is not a part of a game and we always find a few who do not want to play fair or talk fair. Were you ever a farmer? Did you ever work a small and a large horse together? Easy was it not to equalize the double trees by boring a hole off center and putting the large horse on the short end of the pull. In this way the little horse had a square deal. I wonder if Dr. Price got the square deal from Teddy? The first year we tried the progressive clinic it did not work so well. We had some fellows who did not like to have anybody with authority tell them what *they* had to do to get into the clinic. The best progressive clinic we have had yet, was upon conductive anesthesia. The operators got together and rehearsed to overcome unnecessary overlapping. In this way they got in close touch with one another. One had anatomy, another instrumentation, another preparation of the anesthetic, another preparation of patient and others, various phases of the subject. The principal thing is to get the work systematized so as to cover the whole subject as well as it can be covered in a clinic. Then have your discussion at another session and you will be surprised to see how many men get a good deal out of the clinic as well as the others who do not.

After all is said or done in this matter, when the final analysis, we will find this is one of the greatest steps FOR EFFICIENCY, in dental teaching in a clinical sense.

DR. G. A. CRISE, Manhattan, Kansas:

We come to our convention to learn, and the reason we go to certain places to learn is simply because somebody else can teach us something that we do not know. I have attended a great many conventions and have given clinics, and I have been seriously handicapped from seeing what I was trying to do, and I did not do myself justice or the case justice.

The only way to do this work is the way we managed at Kansas by adopting the booth proposition, so that the onlooker passes from one booth to the other. The reason clinics are not attended better is because it is largely our own fault. We people who are not in the limelight and the forefront, as it were, find it necessary to import clinicians because we haven't them in our own

state. At any rate, if we have the clinicians, the men of ability, they are not willing to give clinics. We know that there are many, many practitioners who would make good clinicians, but they do not like to work, consequently we have to go on the outside for clinicians and men to give demonstrations. If we have not in our own state good clinicians and demonstrators we should go to some other state in order to have a successful convention, one that will go down in history as the Tri-State meeting. At the Tri-State meeting in Kansas City, for six days from 900 to 1,000 dentists stayed there day after day and listened to the lecturers. Why did they stay? Because every man who stayed—from 9 o'clock until 12 and in the afternoon was hungry for knowledge. Those clinics woke up both Missouri and Oklahoma. I went home from that convention a better dentist from what I saw and heard. If your state dental societies would carry out a similar plan at their meetings they would be more interesting and successful. To make a convention a success there must be opportunity for a progressive clinic.

HENRY FOWLER, Harrison, New Jersey.

Having just come from the very successful convention of the New Jersey State Dental Society, held at Asbury Park a few days ago, which registered an attendance of over 2000 dentists, the question of clinic management, as you can imagine, was an important one. Like most State Dental Conventions the facilities with which we were compelled to stage our convention prevented to a great degree an ideal presentation of the clinics, however, we feel satisfied that the best was made of the opportunities offered.

Dr. Price has clearly pointed the way in which all up-to-date dental clinics should be conducted. There must be purpose, order and sequence in the method of presenting the clinics. An opportunity must be given the clinician to properly demonstrate his subject and the audience must be controlled in size and seating to the extent that all may gain whatever is being imparted.

The old method of staging clinics, showing everything from a two-piece crown to a prolonged surgical operation on the same floor with little or no regard to order or asepsis, is no longer to be tolerated. Time and energy are too valuable to be wasted in this way.

Dr. Price is entirely right in advocatting the progressive clinic, for in this system alone is it possible to coordinate clinics in such a way that both clinician and audience may profit. The acquisition of dental knowledge has not changed any since college days. If we gain any it is by intensive application. No one ever derived much good from a dental convention if he acted like a pill in a pill box, rushing from one place to another, seeing much and getting little. Dentistry is not learned that way.

Clinics that are arranged in the manner of progressive steps to cover some particular branch of dentistry become at once of direct educational value to the man who is seeking special instruction.

Dr. Price has outlined some general rules which if put in practice will unquestionably lead to better results in the handling of this important part of dental conventions. I am very glad to have had the opportunity of listening to Dr. Price and have profited much from his able address.

DR. J. O. HALL, Waco, Texas.

I want to get clear in my mind one point from Dr. Price in reference to these clinics. I was chairman of the Clinic Committee in Texas for two or three years, and we tried in our modest way, as well as we knew how, to inaugurate this progressive clinic. I understand now we were not fully conversant with the plan. The trouble we have had, as I see it now, was from the fact that our men did not work in accor-

dance with any specific plan. One man required five minutes for his work, another required thirty minutes to give a talk on some particular subject or to give a clinic. Our men as a class are particularly interested in clinical work, and we cannot hope to accomplish much unless we have our plans thoroly systematized.

We are going to try again next year, and if any of you will give me in a few words a plan how to eliminate that trouble I will be glad to hear from you, and particularly from Dr. Price.

DR. A. P. BURKHART, Auburn, New York.

I take it, that most of the men who are here today are officers of various associations or in some way have been connected with the work in the line of producing and giving the best results from clinics, and as such we wish to return to our homes, go to our different states and localities and do the best we can.

In the giving of clinics there comes, in my judgment, a system which has been well defined by Dr. Price, there should also be inculcated marked efficiency. You know the word efficiency is used in nearly every department of life, in the commercial, the professional world, and in nearly everything in fact. Progressive clinics have a place, and as conducted by certain societies have certainly given good results.

The first information I had along that line was at Chicago at the 50th anniversary of the Illinois State Dental Society three years ago, and I will say the system which was there put into operation was one which appealed to me, and it certainly produced results of which the Illinois State Dental Society may well feel proud. However, in giving clinics I believe the local society, the state society, or even the National Association, if it would work along the lines which my experience in at least one direction has satisfied me is the right one, better results would be attained and a larger attendance of dentists. This plan was in part worked out in Kansas City and was simply this: Clinics should be started the first day of a meeting and continued at intervals during the remainder of the scheduled days and not started the last day of a meeting. Observation in my state has shown this, that when the clinics were staged Friday or Saturday the attendance the early part of a meeting was disappointing. When, however, the plan was changed first locally in the City of Rochester, some three years ago and in the state society, and we had a portion of our clinics on the first day we received the boys from all sections of the district as well as from the sate, we had a large attendance thruout the entire meetings. I believe the best results are attained by not naming the day upon which a particular man is to give his clinic, because as I said a moment ago, many simply wait until the latter portion of the meeting, but if you give clinics, beginning on the first day or a portion of it and divide them thruout the session I believe you will have a very much larger meeting in every instance, a more interesting meeting, and the clinics thus given will prove very much more satisfactory.

A little later I may have something to say concerning the plans of the recent Tri-State meeting which, I believe, was an ideal one so far as it has been put into use by the three states. Gentlemen, give your clinics early in a meeting if you desire a well attended meeting from the very beginning.

DR. A. A. BROADBENT, Chicago, Illinois:

I want to add my testimony to what Dr. Price has said with reference to giving progressive clinics. In Illinois, by following a plan similar to that outlined by Dr. Price, we have not only been successful in conducting our clinics but have been able to get a larger at-

tendance. Unless the clinical work is systematized, definitely planned, the members wander around the room and the clinics cease to be attractive to them. I think the present plan of conducting clinics is the only way we can expect to keep up interest in them and improve our method of doing things in society work, and I wish to corroborate what Dr. Price has said today. We have to improve our clinics by careful reading, and I think every state is bound to come to this method which has been so clearly outlined by Dr. Price.

DR. WITMER, Missouri.

The idea of conducting a clinic when you have the material is not to my mind as difficult as to get the material. I have had a little experience in endeavoring to conduct chautauqua work and have been closely in touch with that movement for a number of years, and we have experienced a good deal of benefit from getting in touch with other chautauquas, and in that way getting in touch with material for clinics. I am looking for something good here to take back to the boys, and, it seems to me, our district and state societies should adopt such a system as has been outlined here today by Dr. Price, and if they do so it would be very beneficial.

DR. WESTON A. PRICE, Cleveland, Ohio.

I have been greatly profited by this discussion, and I think the best way for me to do is to try and cover the details very rapidly that are necessary for a successful clinic, but before doing that I would like to lay emphasis on a different viewpoint. I think the tendency of the time, as you all recognize, is that more money should be spent on the program and less on entertainment. To my mind, we have not nearly reached the ideal. I think it is an utter disgrace that a professional man, whose time is worth from $25 to $100 a day, should be required when attending a post-graduate course to spend three or four days or a week of his valuable time and then have the committee in charge spend $150 on programs, and perhaps $250 on ice cream and smokers. (Applause.) Until we are ready to appreciate what our time is worth, we cannot hope to accomplish as much as we desire. Banquets and smokers are good things; they have their place, but the majority of dentists do not attend meetings for that purpose. They come to learn and they expect to learn from clinicians and demonstrators. We might as well take that as a fundamental principle and go back to our state societies and plan to spend $500 to get a program, and for traveling expenses for clinicians, etc., and spend less money on entertainment. It is a perfect insult for our societies to ask a man to spend perhaps one week of every month to go somewhere to help conventions, and expect or let him pay his own railroad fare to and from the place of meeting and then perhaps in addition furnish him a lantern that is not much good and a man to run it who does not know how. Perhaps he destroys several lantern slides, and the clinician or speaker when he goes back home, has to pay for his own lantern slides. We are a pretty cheap lot, and I am referring now to our national and state dental societies. We should put, at least, $500 into our program, and better $1000, for we will get it back every time. We should pay competent men more than their expenses. Why did they have a thousand dentists in attendance at the K. O. M. Tri-State meeting? Simply because they gave those in attendance something worth while. They had good clinicians and good men to read papers. When the programs are as attractive as they are in New Jersey and the Tri-State meeting, they are bound to get a large attendance and an interested audience. If you employ first-class clinicians and

first-class essayists and pay them for their work, you are going to get the benefit of it.

As to the details for working out the clinic plan let us assume that all of you are presidents, or have been, of societies. Relative to the success of the progressive clinic, I will say to Dr. Hall that it will depend very largely on the ability of the man organizing and directing it whether he is competent first to appreciate a progressive clinic, and then the facilities to carry it out with dispatch. If you have not the right man, do not try to carry out that kind of clinic. He must have his details worked out weeks before and his charts and tables ready so that they can be fixed up for every booth days before the clinic. Do not be misled by telling him he can get all these things ready in twenty-four hours and trust to some boys to carry out the details for him. Do not try it. After having the right kind of man, the next thing is to see that he audience appreciates it. Then you must start a campaign of education among the members of your association, telling them what you are going to do and what they have to do when they come there. That things must be run on time and that they must follow your plan to go into groups and behave as you want them to. Having selected your captains, I would send out a special letter, put on it a two-cent stamp, not a one-cent stamp, which is very important, and then having instructed the members of your association and your clinician do not trust to information going to chairmen of clinics by word of mouth, but direct a personal letter to them. Have the information given in written form, so that every man gets an exact copy. Emphasize those things in particular which your clinicians must understand they must fulfill. Let them fill up twenty minutes if that is the time allotted to them. It is a mistake to let them go one minute over. It is better to leave three to five minutes for asking questions. Have them all understand that. Do not let any clinician come with the idea that he can give a thirty-minute clinic or a five minute clinic. It must be an eighteen or a twenty-minute clinic, and no longer, so that the question of detail comes right back to you.

The success of our plan depends upon the president of the association because primarily he is responsible to see that every chairman of every committee is carrying out the detail. Having instructed your men who are to be clinicians and having instructed the members, you should personally see that the charts, the amphitheatre, and the stereopticons are in order. If you make somebody else responsible you should see to it that they are there in proper time. Do not give a man a poor lantern and expect a first-class demonstration. Go to the expense of getting a lantern with sufficient illuminating power to give a good demonstration, and with a corrected lense that will give a flat field and in focus everywhere at the same time. Two-thirds of the lanterns furnished the speaker are very, very poor excuses.

Having instructed your men and your audience, you are then ready for the selection of your subjects. By all means have just as much system in the selection of subjects as you have in the working out of the program. It is unfortunate for instance, to have a man see a clinic, we will say of root canal fillings in advance of some proceeding root canal operation. You must have the progressive idea in the selection of the clinic and that will work out with great interest and profit. To do that successfully, the thing that Dr. Hetrick called attention to must be carried out. The men must rehearse together. Put the men in touch with each other so that each man will bring the subject up to where the other man will begin. Having the series of subjects arranged in the way they must appear, and having

your details thoroly worked out, you do not need to have any concern about men giving up a share of their time because the progressive clinic is a study club. Do you realize that in the last twelve months there have been more study clubs organized than in the whole history of dentistry before. In the City of Cleveland there is a movement on foot, and we believe it will be consummated, to get every man in the Cleveland Dental Society in some study club. There are already fifty dentists who are interested in these study clubs. Men are getting a new appreciation of dentistry. They realize they must go back to the books, and to the fundamentals, and the idea is in order to get the most in the least time, to have an expert who can put it in the most concentrated form for the dentist and let him get it in a large quantity in a short time and, of course, that means concentration of the dentist's strength as well as his time.

THE RELATIONSHIP BETWEEN DISEASES OF THE MOUTH AND GENERAL DISEASES.

By Thomas R. Brown, M. D., Baltimore, Md.

(Read before Odontological Society, Western Pennsylvania.)

IN A SENSE it may be bringing coals to New Castle for a medical man to discuss the relationship between diseases of the mouth and general diseases, and yet at the risk of being trite and uttering many truths better appreciated by you, odontologists, than by me, an internist, I should like to briefly present certain questions which should be of equal interest to dentists and physicians, questions where each is involved in discussing etiology, pathology and symptomatology, while for a rational and successful therapy it is absolutely essential that the two professions attack the problems presented hand and hand and not independently. To me there is no better sign of real medical progress than the obvious tendency of the day for men working in overlapping fields to come together to elucidate the border-line questions presented for solution; the physician and the surgeon no longer look askance at each other, and ipso facto take opposite sides, but each sacrifices some of his extreme views, and the patient is correspondingly better diagnosed and better treated, and no longer falls between the two horns of the dilemma; and so it is with physician and gynaecologist; orthopoedist and laryngologist; internist and physiological chemist, and of very recent years medical man and odontologist. It is refreshing to see our large medical schools recognizing this tendency in the formation of dental departments in close association with their other services, and to realize that the establishment of an odontological section in many of our larger medical societies is a well deserved appreciation of what we owe, what we have learnt, and what we hope to be taught in the future by our brethren in the dental fraternity. And yet the real wonder of it all is that such a recognition came so late; when we consider the chemical, mechanical, and bacteriological problems bound up in the preliminary preparation of the food stuffs and the enormous possibilities for disease in the body as a whole, altho especially in certain of the systems if any of the functions varies from its normal.

I for one am proud to recognize the debt we all owe to the members of your profession who have so broadened our views in this field, who have taught us its importance in the underlying pathology of many hitherto poorly understood conditions, and I still, as I have always done, begin my lectures on digestion to the students with an exposition of the importance of the study of the teeth and other appendages of the mouth, and the hopelessness of curing many widely different digestive diseases without the active cooperation of a competent odontologist.

And so I come here tonight possibly to bring something new to some of you in my short message more perhaps to re-

fill my flagon at your ever deepening spring.

In this short paper that I shall present to you tonight, I shall discuss briefly certain questions bearing on the relationship of diseases of the oral cavity to general diseases and vice versa, taking up in order—the salivary secretions, the effect of certain treatments on the teeth, the role played by metabolic disturbances or dyscrasias on the condition of the teeth, the bacteriology of tonsils, teeth, and sinuses, the effect of oral diseases upon the body as a whole, notably the gastro-intestinal tract, and certain questions connected with diagnosis, prognosis and treatment.

SALIVARY SECRETIONS.

Far too little attention has been paid to a careful study of the salivary secretions, and yet the health of the oral cavity depends largely upon the normal functioning of the salivary glands, both as regards quantity and chemical constitution of the secretion. One often forgets the important role played by the normal stimuli of salivary secretion, notably substances stimulating to the gustatory nerves, especially organic acids and certain of the sugars. The notorious tendency of the present day to treat oral diseases with alkaline mouth washes, and gastro-intestinal diseases with various alkalies must perforce have a harmful influence upon salivary secretion. Pickerill has shown this in animal experiments, and many clinicians have noted similar effects upon human beings, while if the alkalies contain bismuth, calcium, or magnesium there is always the chance of a deposition of these salts as concretions upon the teeth and gums, which may in turn act as distinct irritants leading to gingivitis and pyorrheal abscesses. Increased salivation has its interest too, tho far too little is known of this outside of that group produced by certain drugs, notably mercury and pylocarpine. In our digestive studies we have been particularly impressed by the sialorrhea met with in certain cases of duodenal ulcer, and the diminution of salivary secretion in pancreatic disease, notably pancreatic carcinoma. For the past two years with one of my associates, Dr. Freeman, we have been determining the effect of variations of gastric secretion upon the amount, alkalinity, and diastatic-ferment content of the saliva, but our results seem to show that the influence is practically nil, and that with hyperchlorhydria, normal digestive contents, subacidity and achylia a normal salivary secretion is the rule. Many years ago certain observations were made upon the effect of changes in the saliva upon the gastric secretion, that is, the reverse of the picture, but these results were inconclusive. Thus we feel that the care of the secretions of the mouth, and the food and the drugs placed therein are of fundamental importance to the production of a normal salivary secretion—a condition of paramount importance to both motor and secretory functions of the stomach and intestines, and this again accentuates the necessity of a proper realization of the role of prime importance played by the dentist in preserving a healthy gastro-intestinal tract, by removing causes of mechanical irritation, by bringing about a proper occlusion, in fact by doing everything to promote a normal salivary secretion.

Perhaps we should follow Grieves in his differentiation of mouths into three types according to the character of the salivary secretion—the normal, the hypoacid, and the hyperacid; this is a step in the right direction, and opens up a very fruitful field of research work on the chemistry of the oral secretions, a field which I trust will be actively cultivated by some of you as we of the medical profession must depend upon you for our knowledge of this, the chemical side of oral pathology quite as much as the histological and bacteriological, all, of course, indubitably linked together if

we wish to develop what is so much needed, a broad and comprehensive oral pathology.

THE EFFECT OF TREATMENT.

There is a very interesting chapter to be written upon the effect of various forms of treatment upon the teeth and salivary glands. With the undoubted increase of hyperacid dyspepsia due to our more intensive mode of life with its increased rapidity of eating and poorer mastication of food, and perhaps also due to a better appreciation of the underlying cause of this form of dyspepsia, there has been a marked increase in the use of both alkalies and belladonna. Of the former, as mentioned before, soda unquestionably tends to lessen salivary secretion, while the salts of the heavy alkalies may by their deposition on teeth or gums lead to definite inflammatory changes, and subsequent gingivitis and pyorrhea, as we have noted in a number of cases. With belladonna therapy there is always the tendency to diminution of salivary secretion with its subsequent influence upon both motor and secretory functions of the digestive tract, altho in many of those in whom belladonna is especially indicated, the true vagotonic, it is surprising what enormous doses may be taken with no apparent disturbance in salivary secretion. In the administration of acids, notably hydrochloric acid for gastric sub-acidity and achylia, even with the greatest care etching of the teeth may occur with interstitial and even purulent gum changes as a possible sequela. One must also call attention to the effect of various other drugs used for different purposes, such as mercury, iodide of potash, iron, etc., each of which is liable to cause definite changes in the oral cavity, which may be provocative to more serious disease. In all these cases the true recognition of the pathological possibility should lead by the appropriate method of treatment to a minimization of the oral changes produced.

EFFECT OF VARIOUS DISEASES UPON THE TEETH.

In the pursuit of pyorrheal pockets as foci of systemic, infection far too little attention has been paid to the reverse of the picture, that is, the influence of diseases elsewhere upon the mouth and its appendages. Many careful odontologists have insisted upon this point, and have stated as their belief that local trauma and constitutional disturbances or diatheses are necessary to the development of gingivitis, pyorrhea and periapical abscess. The tendency towards diseased teeth in diabetes, arterio-sclerosis, pregnancy and senility is too well known to need repetition, but unquestionably in many other conditions, notably chronic arthritis and chronic cardiopathies, pyorrhea is the effect not the cause. How many cases can each of you remember, with but a moment's thought when after the removal of many or all the teeth of the cure of such chronic diseases, it has finally dawned upon the physician that he has done the patient far more harm than good in removing one of his few remaining sources of comfort, and often it has not only helped the general disease, but has made it decidedly worse by removing one of the prime factors in the normal digestion and assimilation of food.

To turn to another phase of the subject, severe toothache without apparent local cause, we published a few years ago a long series of observations on neutritis, neuralgia, and myalgia, where undoubtedly the underlying cause was a disturbance of metabolism, probably originating primarily in the intestine, and characterized by a marked overproduction of acid in the body, which could be demonstrated by a tremendous increase in the urinary acidity, and which yielded with great success to the elimination of acids, and acid-forming foods from the dietary and the administration of large enough doses of soda or other alkali to neutralize, or nearly neutralize

the urinary acidity, and von Noordon reported a similar group of cases three years after the publication of our article. This point I feel sure is one of great importance in the diagnosis of various neuralgias and neuritides in the mouth, and in all such cases if no local disease can be demonstrated by the most careful and complete examination the treatment we have suggested should be tried, especially if the patient has noted a marked exacerbation of his symptoms after the indigestion of acids, sweets, acid fruits, etc.

BACTERIOLOGY OF MOUTH.

There is no more fascinating subject that I know of than that of the bacteriology of the mouth in health and disease and the various sequelae ascribed to pathological conditions in the oral flora, and yet the subject is still very far from solved, and offers enormous opportunities for intensive research work. Let us briefly review some of the work along these lines much of which we owe to the dental profession.

TO QUOTE LESCOHIER.

"Hartzell's work, perhaps the most convincing of any that has been reported, points strongly to the importance of the streptococcus in pyorrhea. His observations have indicated that approximately three-fourths of the bacterial content of pyorrhea pus pockets is made up of pyogenic cocci of the streptococcus viridans, and staphylococcus types, and the remaining one-fourth of other organisms. Hartzell's animal inoculations have shown that following the intravenous injection of pus from pyorrhea pockets streptococci of the viridans type are usually recovered, occasionally staphylococci.

"Personal observations relative to the occurrence of streptococci, staphylococci and pneumococci in pyorrhea would place streptococci first in frequency, staphylococcus next, pneumococci being observed in only a small percentage of cases."

Certainly in the light of our present knowledge the entameba buccalis must be regarded as simply a phagocytic scavenger of no fundamental importance in the etiology of local or systemic conditions. No work, of course, has been more alluring than that of Rosenow, his finding of various streptococci and pneumococci in the mouth, their marked increase in pathological conditions, notably in cavities with low oxygen tension, the singularly advantageous conditions presented by the mouth, notably the gums and peridental tissues, in the growth of such organisms, the transmutability of the various forms of streptococci and pneumococci, the specificity of the bacteria isolated in individual cases as shown in the reproduction of the disease in animals, be it endocarditis, other cardiac changes, arthritis, sciatica, gastric or duodenal ulcer, cholecystitis, or appendicitis, the rapid loss of such specificity under repeated reinoculations, all these views of Rosenow, subscribed to by Billings and many others are singularly stimulating, and open up vistas of enormous possibilities. But the fact that these observations have not as yet been completely verified by other investigators, and to borrow a metaphysical argument that these findings seem almost too good to be true, while receptive should make us still scientifically somewhat skeptical of these findings in their entirety until the subject is further elucidated. Here indeed is a field of most fascinating research for those of you bacteriologically inclined, a field worthy of the best and most intensive work. If it should be ultimately proved, as already claimed by the few, that teeth, gums, tonsils and sinuses harbor the bacteria which specifically produce many of the diseases most difficult to diagnose and hardest to treat your labors would have added another debt which the medical will owe to the dental profession.

TONSILS.

In regard to the tonsils as portals in infection I cannot do better than refer to the monumental work, just published of Crowe, Watkins and Rothholz reporting the results of one thousand operations on the nose and throat done with the best hospital care, and subsequently followed for a considerable period of time to determine the late results.

INDICATIONS FOR TONSILLECTOMY.

The conclusions of Crowe and his coworkers are:

I. Local disorders in the upper air passages:

1. Hyperplasia of the tonsils causing difficulty in swallowing, articulation or breathing. One should always bear in mind the possibility of a "status lymphaticus."

2. Frequent tonsillitis or quinsy. In these cases a careful examination must be made of the teeth, accessory nasal sinuses, nose and ears. Infection in any one of these situations may be primarily responsible for the frequent tonsil attacks.

3. A chronic laryngitis or bronchitis may be benefited by a nose or throat operation.

4. A chronic catarrhal or suppurative otitis media or an Eustachian tube affection.

5. Chronic diphtheria carriers. Some of these cases will clear up after removal of the tonsils and adenoids. Often a pure culture of the Klebs-Löffler bacillus, virulent for guinea-pigs, may be obtained from the bottom of the crypts of the excised tonsils in cases that have no clinical manifestation of their presence.

6. Any of the various "reflex neuroses" in children; such as asthma, paroxysmal nocturnal attacks of coughing, enuresis nocturna, and sometimes convulsive seizures resembling petit mal. These are sometimes due to tonsilar or nasopharyngeal disease.

7. New growth. The carcinomas are best treated by operative measures. The sarcomas, however, usually respond promptly to radium treatment. We have so far had six cases of primary lymphosarcoma of the tonsil or in the nasopharynx, with involvement of glands, that have remained well for two years or longer after radium treatment.

II. For local trouble in the cervical glands draining the tonsils:

1. Simple hyperplasia of the glands at the angle of the jaw. This condition is very common in children and young adults, and is an evidence of a chronic tonsil or nasopharyngeal infection.

2. Tuberculous cervical adenitis. We believe these cases are best treated by: (1) putting the nose and throat (the portals of entry for the tubercle bacilli) in normal condition; (2) removal or local incision and curettage of the caseating glands; (3) the judicious administration of tuberculin; and (4) general hygienic measures—with especial emphasis on the necessity of rest.

III. For general systemic disorders secondary to a focus of infection in the tonsils.

1. Infectious arthritis is which the periarticular changes predominate.

2. Myalgia of myositis.

3. The early stages of a glomerulonephritis.

4. The various nervous symptoms designated as "neurasthenia."

5. Occasionally, an iritis, refractive to all treatment, may be benefited by a tonsillectomy; but in these cases lues or tuberculosis should be first considered as an etiological factor.

6. The rare conditions, in which the chief symptoms are septic temperature; leucocytosis; general muscular and joint pains; general intoxication with negative findings on physical examination except for large, succulent tonsils.

PYORRHEA.

To make one realize the importance attributed to the teeth and peridental tissues as foci of systemic infection let me

quote my friend, Dr. Barker, who has allied himself peculiarly intimately with this phase of the subject, and who says in his Monographic Medicine "gingival and periodontal infections are among the commonest causes of disease in people past middle life. The physician who fails personally to inspect the gums and teeth of his patients under good illumination and to call skilful dental specialists to his aid in many cases, will surely fall behind in the race of medical practice." Billings has even more completely identified himself with the view that diseased conditions of the mouth are of fundamental importance as specific foci of systemic infection, and in his book recently published he gives the results of many years of careful observation and study, referring, of course, very extensively to Rosenow's work with which he is in perfect accord. His book represents undoubtedly the largest single contribution to this subject, covering as it does the observations of himself and of many assistants for the past twelve years. The number of diseases which he thinks in certain instances at least can be regarded as due to focal infection usually originating in the mouth is very large—acute rheumatic fever, rheumatic endocarditis, myocarditis, and pericarditis, chorea, nephritis, malignant endocarditis, appendicitis, gastric and duodenal ulcer, pancrea atitis, erythema nodosum, spinal myelitis, osteo-myelitis, thyroiditis, iridocyclitis of the acute diseases, and of the chronic, chronic infectious arthritis, chronic infectious nephritis, chronic peptic ulcer, and chronic infectious endocarditis. I have been perhaps peculiarly impressed with the unquestionable etiological role played by such foci of infection in acute infections in comparably young people, such as acute joint conditions, acute thyroiditis with hyperthyroideal manifestations, and acute choroiditis, but I have seen very few cases of the more chronic diseases where the removal of what was regarded as the primary focus of infection showed more improvement than could be expected from the *general* improvement to be expected therefrom. When we remember that at least 25% of all people have gingival disease, either simple, ulcerative, interstitial, or true pyorrhea, that the cultures in these cases without any apparent systemic involvement are practically the same as in those with such disease we cannot escape from the fact that there must be at least two elements to be considered, tendency, susceptibility, diathesis, or lowered resistance on the part of the patient (which may be general, altho more often local), and the bacterial element. Many at least go so far as to absolutely deny any specificity of action, ascribing the good results undoubtedly produced by the removal of foci of infection to the subsequent improvement in the general health of the patient with its associated increased resistance to disease, a view however, which while easy to harmonize with the results obtained in the more chronic cases, certainly cannot explain certain of the acute cases mentioned above, where there must be a true specificity of action. Let me quote in this connection the views of one of your profession who is peculiarly opposed the local theory—Schumann of Chicago.

"Of course, the proof offered hardly justifies us at this time to accept prima facie the positive statement which is so frequently made, namely, that direct interrelationship of systemic diseases to oral foci of infection has been conclusively and scientifically proved, but it does seem that we may accept this theory, at least to the extent that oral foci of infection have a decided influence on general health and diseased conditions. Many physicians besides Hunter, Goadby, Rosenow, and Billings have proclaimed this direct interrelationship and etiology more or less definitely. That the absorption of pus germs or their toxins thru the lymphatic system from the

mouth and throat is of a nature to favor the production of adenitis and lymphatic tumors is a well established fact. Acute and chronic polyarthritis are affections well within the possibilities of being considerably influenced by oral infections, and in many cases this is definitely claimed to be the actual and sole productive cause by Judson, Donald, and Medalia."

"In conclusion, I believe that oral foci of infection are harmful, and I believe that they create a low-grade secondary infection, which permits other infections easily to obtain entrance and a firm hold on the host. I do not believe that these foci of infection contain organisms directly responsible for distinct secondary diseases. I believe that the toxins and organisms absorb from pus surfaces in the mouth may so undermine the resistive power of the organism in general that it is laid open to easy infection, and that such foci create a condition favorable to the development of other diseases. I believe, in addition to local treatment in certain cases, the use of autogenous vaccines, as recommended by Medalia, tends to overcome this low-grade secondary infection."

My friend, Dr. Buckler, from his large experience with the children in the public schools in Baltimore, feels quite convinced that with the filthy, streaming mouths met with so frequently in the children of the poor, exuding pus and bacteria by the millions he has practically never seen any signs of distant focal infection, altho all of these were below normal, were thin, anaemic, had some gastro-intestinal disturbance, and all were remarkably improved by the cleaning up of the mouth and special treatment of the tooth, by extraction, specific pyorrheal treatment, and various plastic treatments, removal of the tonsils, etc. Certainly it is not so much in that group of cases with obviously foul teeth that so much danger to special organs and tissues is to be expected as it is in those cases where the focus of infection is impossible to recognize by the ordinary modes of examination, and where the radiogram alone, if properly interpreted, can reveal the closed pyorrheal pus pocket, or occluded periapical abscess with its far greater potentialities for systemic infection. It is in this group of cases that the really brilliant cures have been obtained—acute arthritis, hepatitis, pericarditis, choroiditis, thyroiditis, etc. Whether again immunity may be produced by these foul mouths, which may lessen the chance of systemic infection is another question, which may play a considerable role in this connection.

After all there must be truth in both sides of the question; too many cases of acute infection have been immediately cured by the removal of the focus of infection in the mouth to warrant us in denying that in some cases at least there must be specificity of action, but yet again there is too great a variability in the result of treatment of such systemic infections, and too many—notably case of the chronic type, where removal of supposedly primary focus is followed by absolutely no improvement to keep us from realizing the very large role that lowered resistance, diathesis, or metabolic disturbance may play in such cases—in fact, in many it may play the only role. I feel quite sure for example that there are many cases of arthritis which have been regarded as infectious, but which are in reality cases of atypical gout—I have had several such cases in my practice, and here the Eppinger uric acid test has been of really great service to me. Yet again the analysis of the chronic cases is very difficult, for when permanent changes have occurred, when secondary foci of infection have been established, when general resistance has been irretrievably lowered it is chimerical, to say the least, to expect removal,—even wholesale removals of various foci of infection—teeth, tonsils, sinuses, gall-bladder, appendix, etc., to produce very

marked influence on the general disease even if in its early stage it was due fundamentally to a primary focus of infection with its specific bacteriology.

GASTRO—INTESTINAL TRACT.

No conception of the gastro-intestinal tract is complete that does not regard the mouth as an integral portion thereof. Malocclusion and deficient teeth play quite as important a role as caries and pyorrhea in developing pathological conditions in the lower levels of the digestive tract. The swallowing of poorly chewed food, or improper food because of the patient's inability to chew the food stuffs which he needs is bound to cause marked disturbance of the stomach, and if to this is added the swallowing of pus and bacteria from diseased teeth as well we have the basis for the development of many gastro-intestinal disorders. In many cases this simply causes loss of appetite, a moderate anemia, and other evidences of malnutrition, and in this connection there is no more brilliant chapter in therapy than the marvelous general improvement wrought by the dentists in their wholesale renovation of the mouths of the poorer class of school children in the larger cities. In regard to the stomach and intestines themselves we have made numberless observations over a long period of years. As a rule at first we have a subacute hyperacid gastritis, then a general diminution of acid until the last stage is reached, a true chronic achylic gastritis with complete absence of hydrochloric acid, while towards the later stages, partly due to the patient pylorus associated with the gastric subacidity, partly to lack of proper disinfection of the stomach, there develops an enterocolitis of increasing severity, with probably a quite abnormal bacterial flora, with the possibility of the development of the various symptoms, local or general, of intestinal autointoxication. With the achylia gastrica, or disappearance of acid in the stomach juice there may develop a persistent diarrhea, and it is our experience that the majority of cases of diarrhea in the aged are of this type, that is, are primarily due to deficient or diseased teeth, secondarily to the achylia produced thereby, and that most of them are tremendously helped by the administration of muriatic acid, and by having their mouths put in the optimum condition, dentally speaking. As to the specificity of action of pathogenic bacterial in the production of gastric and duodenal ulcer; cholecystitis, and appendicitis, as insisted upon by Rosenow, we cannot help but feel that the matter is still subjudice. While it is unquestionably true that such bacteria have been found in ulcer base, gall-bladder, or appendix, it is possible, and in fact we cannot help feeling highly probable, that in the majority of cases there must be some other primary reason for the disease, and that in many instances these bacteria are but secondary invaders.

PYORRHEA OF GENERAL DISEASE.

One must never forget, however, at the expense of reiteration, that we must differentiate cause from effect, and that frequently pyorrhea is not so much a primary local infection as a secondary manifestation of some general disease, and this, of course, is of fundamental importance in determining the proper treatment. I fear many of you odontologists suffer frequently from this form of malinterpretation of symptoms by members of the medical profession, and have been persuaded to extract many teeth which might have been saved by more conservative treatment by the insistence on the part of the physician that he had found the true cause of the general disease, when you in your heart of hearts knew full well that in reality it was the general disease, with possibly a certain local diathesis, that was the cause of the pyorrhea. This is a mournful group of cases and each of us can visualize many of these unfortunates, sacrificed to the prevailing tendency of the day, that local

infection in teeth or tonsils is probably the specific cause of almost any general or special disease of possible infectious origin.

Grieves says in this connection:

"It is the writer's firm conviction that a true pyorrhea cannot occur without some predisposing cause, no matter what the local primary lesion may be, malocclusion, local irritation, etc. It must be remembered that every one of us have, some time in our lives, suffered gingival lesions of no greater import than those described as the cause of this disease, by the "localists," and yet all of us are not suffering from pyorrhea, altho we have been told so by the pyorrhea specialist."

"Michaels, Kirk, Black, Howe, Ferris, and many others insist on the dietetic and neutritional balance as related to all dental disorders. Aside from actual systemic disease, which, of course, has its effect on the mouth, all oral pathology has for its predisposing cause the nutritional and malnutritional element. Accordingly no mouth classification is complete that does not recognize the mouth as an integral part of the gastro-intestinal tract both in its secretory and excretory function."

"It is easy to follow a fashion and jump to the conclusion that practically all of our obscure diseases may be and are due to the small foci of infection. There may be, as the result of a fad, a too wholesale cutting out of tonsils and extracting of teeth. While we should recognize that there is truth in this important lesson as to focal infections, we must not, in an extravagant manner, think that this accounts for all our chronic diseases. It means that in every single case we must individualize."

UNERUPTED TEETH.

Every one, of course, recognizes the very deplorable effects both local and systemic of malocclusion and of deficient teeth, but there is in addition a peculiarly interesting chapter to be written upon the reflex symptoms due to unerupted teeth, usually unerupted wisdom teeth, often with absolutely no local signs or symptoms to guide us in our diagnosis. Let me mention a few of such cases that I have seen—first, a student in our medical school, who suffered with intractable nausea and vomiting, in whom the physical examination, including a dental examination, was negative; first a rest cure was given with no result, then a surgeon was called in, and on general principles removed the appendix, and then when the symptoms persisted a brain specialist was called in, who saw many signs of brain tumor, and whose radiograms of the head were regarded by him as suspicious. The student went home sick and discouraged, and there her own dentist had careful X-rays taken of all the teeth, and all were healthy but the plate showed a deep unerupted wisdom tooth, absolutely devoid of local symptoms, which was extracted with considerable difficulty, with the immediate and permanent disappearance of all symptoms.

Second, several patients presenting the classical symptoms of hyperthyroidism, who had been temporarily helped by rest cures and radiations of thyroid or thymus, but always with a rapid return of symptoms after the cessation of treatment, whose teeth were absolutely normal to the usual dental examination, but where the radiogram demonstrated unerupted wisdom teeth with no local signs or symptoms, and yet with the removal thereof a rapid, steady and consistent improvement.

Third, a child with agonizing nocturnal pains in both hips at night lasting for a period of six weeks with a negative physical examination, including X-rays of the spine and hip joints, apparently normal teeth, but again an unerupted tooth discovered in the radiogram, and immediately disappearance of symptoms with its extraction.

Each of you can probably add other interesting cases to this group; it is a phase of the subject to me peculiarly interesting, and should certainly make one

always think of this possibility in cases of doubtful etiology, notably those in which abnormalities of the innervation play an undoubted role in the production of the symptoms—in these cases complete radiograms of the mouth should always be made by an expert in this line, and should be interpreted by one who is skilled in this very difficult form of plate reading.

TREATMENT.

As regards the question of treatment the odontologist should be far more competent to judge what should be done than the physician, and yet there are certain medical thoughts in this connection perhaps worthy of mention— the importance of removing single foci of infection in all cases of diseases of doubtful origin in the hope that we may find that our case falls in the group of specific focal infections. The great danger in capping in dental infections in its possibility of allowing the infection to remain occluded with its low oxygen tension, and its greater possibility of systemic dissemination. The extreme foolishness in waiting too long in trying to save obviously diseased teeth in cases of increasing or recurrent general disease, for if the primary focus is in the mouth it should be removed early, while even if it is not in the mouth, the general resistance of the patient must be steadily lowered by the local infection; for in focal infections early removal is absolutely fundamental if success is to be expected. While vaccine therapy is still on far from a scientific basis and the results in many cases have been very disappointing, nevertheless, the preparation and use of autogenous vaccines are justifiable in cases not yielding successfully to other forms of treatment.

"Professor Medalia, in particular, has shown the tremendous improvement in conditions such as rheumatism, boils, furuncles, interstitial nephritis, and acne by the use of autogenous vaccines for the treatment of alveolitis in conjunction with these diseases." (Schumann.)

The absolute necessity of recognizing the underlying diathesis or constitutional tendency not only in systemic disease but in pathological conditions of teeth and gums as well, and the necessity of paying quite as much if not more attention to the treatment based on this conception as to the treatment of the focal infection itself—certainly the more one studies these cases the more one feels the great importance of this in the majority of cases. One should always remember the danger of closing possible foci of infection for a closed pus pocket with no drainage offers unquestionably a chance for a lymphatic or a hemotogenous infection. That this occurs so often is not to be wondered at when we realize that in this whole country there are only about two hundred odontologists who are real experts in the local treatment of pyorrhea. Camac says:

1. The first factor against the proper care of these cases can be best removed by the direct consultation between dentist and internist and their continued cooperation in the care of the case.

2. The second factor is the tenacity with which men and women alike will insist on retaining rotten fangs in the mouth. The dentist regards the loss of a tooth as the internist does the death of a patient, and in this opinion the dentist has the insistent support of the patient. It is not an exaggeration to say that in saving certain teeth the dentist may be condemning the patient to a living death thru subsequent crippling arthritic infection or actual death thru septic invasion of some vital organ. This factor can be removed by educating the public, thru the medium of the internist and the dentist, to the realization of the seriousness of these conditions.

To quote Brun, "the two great mouth diseases and that group of gingival lesions beginning as simple gingivitis, and ending as pyorrhea alveolaris are both we believe the expression of a diathesis

or dyscrasia predisposing to or actually producing metabolic changes, while the gingival lesions are the product of some localized trauma in most of the cases. All theories for a specific organism for pyorrhea have fallen of their own weight.

"In regard to treatment my rule is first the extraction of all loose and swaying teeth and this is good dentistry for it prevents the destruction of the adjacent alveolar walls. If there be no pyorrheal specialist and the pyorrhea is general, better, extract all but a few of the firmest teeth, and make a plate not a bridge, altho there is always danger of septic pneumonia if this be very extensive in old people. The mouth should be examined in every patient by a dentist skilled in diagnosis for the examination by the internist if bound to be superficial. Ethically the patient should be referred to his dentist who should be told to rule out every possible portal of infection in the mouth. Whether you will get results depends entirely upon the skill and the attitude of the dentist. All that has been said of the gingival lesions can be repeated with emphasis of the peri-apical hidden area on firm teeth unknown to the patient."

CONCLUSIONS.

What conclusions then may be drawn from this very cursory review of this subject of ever-increasing interest?

1. It is the duty of the dental profession to study scientifically the pathology of the mouth, including its bacteriology and chemistry and to put it upon such a firm scientific basis that in place of the chaotic state which exists at present we shall have a concrete, comprehensive, and concise oral pathology in the broadest sense. This would be of incalculable benefit to both odontologists and internists in elucidating many of the unsolved problems in oral and general pathology. We already owe much to you of the dental profession—we will be much more in your debt if you can present to us the proper conception of the normal and pathological anatomy, histology, chemistry, and bacteriology of the mouth and its secretions.

2. Far too little attention has been paid of late to the question of idiosyncrasy or diathesis in systemic disease, and yet this must be done in determining the underlying factors of many systemic diseases of doubtful origin if we wish to have a complete picture of its pathology. We are far too prone to ascribe off hand disease to focal infection, far too loath to admit that an underlying constitutional peculiarity may play an equally if not more important role.

3. Nevertheless, while realizing this we must recognize the danger of foci of infection, not necessarily always as the primary cause of any especial disease, but as a cause of lowered body resistance, and lessened immunity to disease, and it is worse than folly to postpone too long radical measures.

4. On the other hand, it is quite unjustifiable especially in chronic diseases of long duration in older people, notably certain of the arthritides to indiscriminately remove teeth, tonsils, gallbladder, appendix, or other possible foci of infection. In most of these cases the harm done by the lowered resistance inevitable to the operation is rarely compensated by the removal of the possible focus of infection in the stage of the disease which is presented, and to take away the comfort of chewing or of smelling from these patients, many of whom have already practically lost the power of locomotion is indeed poor comfort.

5. In acute systemic infections, on the other hand, the chances of a complete cure by early removal of infected tooth or diseased tonsil is much greater, and these furnish the really brilliant results—the acute cases of arthritis, myalgia, neuritis, etc., of young people treated thus radically before the tissue changes have become too great to allow

subsequent repair, and before secondary foci of infection have been firmly established.

6. In all doubtful cases it is most important that careful and complete radiograms of the teeth be taken, and that they be interpreted by some one skilled in their reading—in some few cases an unerupted tooth with no local symptoms may be discovered as the true underlying cause of the disease picture presented.

7. One should always realize the fact that metabolic disturbances, as for example, various forms of an increased acid production of intestinal origin may produce types of neuritis or neuralgia quite as severe as those due to infection —these cases show marked urinary hyperacidity, and are markedly helped by alkaline therapy.

8. No conception of gastro-intestinal pathology is complete if it does not include the conception that the mouth with its apendages and its secretions is an integral part thereof, and many cases of most stubborn digestive disease can be better cured by the dentist than by the internist.

I want to once more insist upon the ever increasing importance of a closer reapproachment between the dental and medical professions for each may learn much from the other. This should not mean simply sending the patient from internist to dentist, and vice versa, but should mean a real consultation between the two on each case of doubtful diagnosis and therapy. From the general knowledge of the one and the intensive knowledge of the other, the proper treatment would be approximated in a far greater proportion of cases, the view point of each would be immensely broadened, the chances of too great delay or too radical treatment materially lessened, and the welfare of the patient materially improved.

I wish to sincerely thank you, Mr. President, and the members of the Odontological Society, for the honor you have conferred on me in asking me to be present tonight, an honor which I doubly appreciate because I take it that it means that you feel as I do, that an immense field of partially explored pathology and half baked therapy may be put upon a far more scientific and successful plane by a closer union between your ever broadening profession and that of internal medicine.

ORAL SANITATION, EXAMINATION AND HYGIENE.

By F. H. Bockoven, Lieutenant, Dental Corps, U. S. A., Fort Bliss, Texas.

(Read before the School of Instruction for Dental Officers, at Fort Bliss, Feb. 2, 1917.)

EXAMINATION: First, obtain a brief history from the patient, which is generally to comply with their request to examine a special tooth or a diseased condition of which the patient is aware. Care should be taken as to the approach of a new patient, especially at the first setting, as first impressions are then formed, which are often lasting, and if the stranger is approached in a careless manner he may get ideas of undue roughness, personal untidiness, and dirty equipment; many times unfounded, yet never the less lasting with the nervous type of patients. The patient at each setting should have evidence that the operator's hands had been washed, and that he shows regards for the simpler forms of cleanliness. Towels and linen on the chair should be inviting and unsoiled. If the operator after washing his hands will dip them in cold water and leave them a little moist, the patient will derive a pleasant sensation.

When these important factors have been attended to, it is then necessary to be able to recognize pathologic conditions, and make a correct diagnosis. This means that the operator must possess a broad knowledge of general pathology, and a special knowledge of dental or oral pathology. To know the drug or remedy, if properly applied or administered will reach the recognized pathologic condition, and act the most favorable. This means that one must also possess a knowledge of pharmacology, and therapeutics. To have on hand or know when needed the drug, remedy, or the technic of the operation required to assist nature in correcting and restoring as near to normal as possible, pathologic conditions in the oral cavity. A drug or remedy or mode of treatment of certain conditions, that has proven by experience, satisfactory, is the one to use. The etiology if possible be recognized for in most cases if not all, remove the cause and nature will do the rest. A thoro knowledge of the anatomy of the part and adjacent parts affected is very essential. One must possess a knowledge of osteology, muscles of expression, mastication, relation of the part to vessels and nerves, and to know from whence it derives its supply of both. The action of the muscles. The articulations of the various bones of the head and face, and the way they are attached or joined to one another. The relation of the oral cavity to the nasal cavity, nasopharynx, oropharynx, and secretory structors.

The next procedure is to take a general survey of the mouth before advising the patient as to the future procedures. The operator should note at a glance; the care that is being bestowed upon the teeth and mouth in a prophylactic way, also the health of the soft tissues and the number of extracted teeth. He should also note the presence of dentures, crowns, or bridges, and the amount of

work previously done, noting its quality and probable age, as well as the number of badly decayed teeth yet unfilled. He should note the general health of the patient, probable age and habits. All this can be done at a glance. Then the operator will be much better qualified to advise the patient as to what is best to do in that special case.

If the patient is in pain its alleviation is of first importance, and should receive immediate attention. It may require the application of medical remedies, or some mechanical procedure, or even the extraction of a tooth, but whatever it is, it must be done at once, as the patient is in no mood to receive sage advice about the future when he is at present in pain. Relieve the pain and then preach to him.

The order in which you receive your patients, referring to army practice: First instruct your assistant to ascertain if any one waiting is in pain, and see to it yourself that he complies with your order. Always give such patients immediate attention. If you are busy and such patient presents himself, give the one you are working on a little recess, and attend to the one in pain, no matter who it may be.

Early in the examination setting the patient should be advised of the necessity of a prophylactic treatment, provided the teeth are not already in a cleanly condition, which is seldom the case. Salivary deposits should be removed in order that every part may be open to inspection. This is second only to the relief of pain, and it is manifestly the duty of the dentist to attend to prophylaxis before proceeding to the making of fillings any further and complete examination, which is the finding or locating of the smaller, proximal, cervical, pit and fissure cavities.

Instrumentation: The instruments needed are a clear, uninjured mouth mirror, sharp exploring instruments of various shapes, cotton pliers, absorbent cotton, waxed silk floss, chip blower, and occasionally mechanical separators. The last in my own opinion should only be used when absolutely necessary. The light of the operating room should be the best that nature can furnish, unless necessary to use artificial light. In locating caries the position of which is most likely to be found in the fissures and sulci, and upon the approximal surfaces, the latter being very difficult sometimes to locate; at the same time quite an extensive cavity exists. The explorer, after excluding moisture from the region, is introduced into the interproximal space with the point toward the occlusal surface and passed back and forth; in this manner the entire surface may be examined, except the contact point. The contact point may be examined by waxed silk floss, passed back and forth between the points of contact. If caries exists the floss will catch on the rough margins and will be torn.

The examination should be conducted systematically, using some order. In this way your examination will be complete. If the examination is haphazard some affected part is likely to be overlooked.

Oral sanitation and hygiene,—cleanliness of the mouth is of the greatest importance if the vitality of the teeth is to be prolonged, and if the various constitutional conditions which are undoubtedly traceable to the mouth are to be avoided. This subject presents itself under several heads; first mouth lesions traceable to constitutional diseases, and second, constitutional or systemic pathological changes dependent upon lesions within the oral cavity. Under the first head are found the various ulcerative conditions, to be considered under the head of stomatitis, also bleeding gums which are associated with soft and flabby gums. Users of tobacco and alcohol and people who are careless about using a tooth brush regularly are liable to have mouth lesions. Pyorrhea and other ul-

cerative conditions are frequently found in individuals who have syphilis as an underlying factor or who have a tubercular lesion in some other part of the body. In all cases where any variety of ulceration is found such as pyorrhea, etc. Bacterial culture is carried on more rapidly, and constitutional infection necessarily results, where the vitality is reduced.

Many cases of infection following dental operations are due to self infection. The open wound left by the extraction of a tooth furnishes a convenient point of entrance for bacteria. Death from septic causes is not uncommon, following operations in the mouth. One of the more common and most important effects of carious teeth are the enlargement of the cervical lymphatic glands, and tonsilar enlargements, may be due to the same cause. Ludwigs angina, characterized by diffuse cellulitis of the region between the lower jaw and the hyoid bone, is in some cases due to infections from a carious tooth. The bacteria of the mouth may also produce remote infections, such as malignant endocarditis, osteomyelitis. The mouth may be the means of transmission of syphilitic virus by means of the saliva and instruments employed in the mouths of syphilitics. It therefore behooves us as army dental surgeons to use the utmost care of instruments, and for our own protection after handling such cases; as the percentage affected with this disease is somewhat higher in the army.

A large proportion of malignant diseases of the mucous membrane, and maxillary bones are caused by neglected teeth. Sharp projections of enamel irritate or abraid the mucous membrane every time the tongue or mandible is moved, and the constant irritation furnishes a field for absorption, or is the cause of cell proliferation and an epithelioma results.

In this paper I have not tried to cover the technic of producing the hygienic condition in the mouth. Taking it for granted that you are more or less familiar with that procedure, but have touched more on the effects that an unhygienic mouth will produce.

In conclusion, let me emphasize the importance of thoro instructions, actual demonstrations if necessary to the patient as to how they can best keep their mouth in a good and healthy condition. Impress them with the golden rule of dentistry which is, "Clean teeth will not decay, or will reduce caries to a minimum."

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WESTON A. PRICE, M.S., D.D.S.
President and Managing Director
CLEVELAND, OHIO

THE COMPOSITION OF SALIVA IN RELATION TO THE INCIDENCE OF DENTAL CARIES.

By John Albert Marshall.

From the Department of Biochemistry and Pharmacology and the Laboratories of the Department of Dentistry, University of California.

(Submitted in partial satisfaction of the requirement for the Degree of Doctor of Philosophy in the University of California and accomplished in part under the auspices of the Research Institute of the National Dental Association.)

PART 2.

RELATIONSHIP OF DENTAL CARIES AND THE COMPOSITION OF SALIVA TO DIETARY CONDITIONS AND THE LOCALITY AND NATURE OF STIMULI PROMOTING SECRETION.

a. The relation of diet to the incidence of caries.

The alteration in the salivary factor may be due to either a direct or an indirect cause. If the former, then the presence of dental caries in on otherwise healthy mouth would initiate the change. If the latter, then the change is either incidental or comprises a portion of a vicious circle.

Among the indirect factors which may initiate an acute disturbance may be mentioned diet, a lesion or an infection, a chronic peripheral nervous affection, a central nervous affection or lastly a defect in the processes of repair and growth correlated with a defect in salivary function.

Diet comprises *per se* two factors, namely composition and taste. The former has been the subject of much discussion and research and the conclusions reached by the many authorities appear to be rather negative in character. Data hereinafter reported will deal more particularly with this phase.

It has been shown (6) that the salivary factor is constant in certain types of insanity to the same extent as in the

normal individual and from this fact the deduction may be made that differences in neutralizing power are not related to the central nervous system.

In reviewing the literature concerned with the problems of dental caries and its possible relation to habits of cleanliness, climatic conditions, diet and general health of an individual or of a race, one notes a lack of uniformity in the recorded observations. This may be attributed to the fact that the many different writers were influenced in their judgment by different standards of observation, so that teeth which superficial examination would designate as noncarious might disclose, upon a more thoro examination, exactly the opposite condition.

Pickerill (1) states that certain food investigations point to the fact that the modern dietary of a civilized world differs from the diet of the uncivilized world in that the former is less hard but more tough and requires, therefore, more triturating but less crushing. From this conclusion the idea is advanced that, since different sets of muscles are used in tritrating than in crushing, the over development of these triturating muscles (buccinator and peterygoids) is responsible for both the abnormally shaped as well as the undeveloped dental arch. This, in turn, accounts for the increasing number of malposed teeth which accompany the under-developed arch. Malposed teeth are very susceptible to dental caries and therefore the increase of this disease among the modern civilized nations is correlated to our changed habits in masticating. Pickerill notes further that of the races of the world, the meat eaters, or at least those whose food is largely protein in character, were quite as susceptible to caries as those whose diet was mainly vegetarian. This is contrary to the views expressed by both Mummery and Patrick. The argument advanced by Pickerill is that the immune races, which include according to some authorities the Asiatics, Africans, Polynesians, Austrians, *et cetera,* owe their comparative freedom from caries to the fact that their diets were both varied and sapid. Their universal use of masticatories resulted in the prevention of stagnation within the oral cavity (p. 314) a fact which other investigations appears to support.

Dr. R. Thurnwald, in speaking to the author of his anthropological researches in New Guinea, mentioned that the inhabitants in that section of the world seem to be comparatively free from dental caries. Their diet is mainly vegetable, consisting of yams, sago, rice and sugar cane, etc.; meat is rather an accessory and, with the exception of the rather scarce mango, there are no acid fruits. The custom of chewing the betel nut plays, unintentionally, an important part, no doubt, in their oral prophylaxis. For at the age of puberty this custom, often connected with one of the initiatory ceremonies, is commenced and continued thruout the life of the individual.

Contrary to the usual belief, this betel nut habit does not blacken the teeth. For that purpose there is employed a mixture of cocoanut oil and soot which is vigorously rubbed on the teeth.

The betel nut is not used alone but is combined with seeds or leaves of a peppery nature together with pulverized lime from calcined shells. These three substances are taken into the mouth one after the other and are masticated between meals. The old men are edentulous and prepare a paste by mixing the material before chewing. The natives expectorate profusely after the use of this mixture and the saliva is colored blood red. This coloration might be ascribed to the bleeding or to a compound formed by the action of the lime on the betel nut. The teeth are lost between the ages of forty and fifty and are exfoliated comparatively rapidly once the process has commenced. This ex-

foliation is accompanied by swollen and bleeding gums.

Calmulus is deposited upon the teeth in almost unbelievable quantity, and it is often the case with the adults to see the size of the lower incisors increased by these concretions to 300 or 400 per cent.

Underwood (2) after examinations of skulls from different collections makes the following comment:

"In the hot belt of the earth including India, Africa and Southern China, bathing and washing are natural habits because of the heat; rinsing the mouth after meals and the use of sticks, toothpowder, ashes and salt for cleansing the mouth is almost universal among the natives; while the food is largely rice, and no alcohol is used. In all of them caries is so rare that to all intents and purposes the natives may be regarded as immune."

He states further that the people of the arctic region whose personal habits, at least in regard to the care of the mouth, leave much to be desired, and whose diet is quite different, likewise enjoyed immunity. He considers the Australian native equally immune. These observations lead him to conclude that the use of artificial foods and the replacing of breast feeding exerts a direct influence in the "weakening of the tooth defenses." Just what constitutes "tooth defense" is not mentioned.

The effect of certain drugs upon the teeth has been dealt with by Austen (3). The systematic conditions which are supposed to favor the development of caries are anemia, dyspepsia, pregnancy, acute rheumatism, enteric and other continued fevers. Various salts and compounds of mercury, lead, bismuth, silver and copper were used in the experiments. Altho it was found that the drug was partly excreted into the oral mucosa, yet it is rather an open question whether this excretion at one time may be so long continued as to accelerate or even cause any deleterious effect upon the erupted teeth. Another point however which may well be considered, is that the frequent drugging of growing children promotes a disturbance in the nutrition of the ameloblast and of the odontoblast, thereby bringing about structural changes in the enamel and dentin respectively. Histological examinations conducted along this line of experimentation would undoubtedly throw light upon certain phases of present therapeutic methods.

In table 6 are presented certain abstracts and notations upon the teeth and diet of a few races from different parts of the world. Definite information on the subject appears to be rather scattered for in many instances an author may detail the foods at great length, the manner of cooking and habits of eating but will overlook entirely the conditions of the masticatory apparatus. In so far as the relative amounts of protein to carbohydrate in the diet are concerned, the data to confirm Pickerill's (1) conclusion in this regard, namely, that the protein eating races are as susceptible to dental caries as those whose food is mainly carbohydrate. On the other hand they appear to negative the popular impression that the teeth of primitive races are relatively immune to caries.

b. *Relation of type and locality of stimulus to the neutralizing power of the secretion of saliva evoked by the stimulus.*

If the chronic disturbance of the neutralizing power be due to a chronic peripheral nervous affection or to a lesion or an infection remote from the salivary glands or teeth, such a disturbance would probably act thru nervous reflexes. If the locality of the lesion is important, then by applying a definite stimulus to a circumscribed area in the oral mucosa such nervous irritation so produced might be expected to influence the neutralizing power. One of the easiest

TABLE 6

Race	Teeth	Diet and Habits	Authority
Australian	"Toothache and indigestion common"	Large protein diet. Flesh sometimes eaten raw. Only vegetable. "Nardu" grass fern roots, yams	Eagle Bank and Crow, J. Mathieu. David Nutt, London
Australian	Teeth very tender	Chewing fiber from making of twine wears down teeth and makes them tender	The Australian Race, E. M. Curr. Trubunder & Co., London
Australian		Eat almost anything in the shape of animal food	Customs, Rites, etc., of the Aboriginal Tribe of the Gulf of Carpentaria, W. G. Stretton and E. C. stirling. Trans. Roy. Soc. So. Australia, vol. 17, part 2, p. 240
Australian		Eat all the mammalian fauna	Report of the Horn Expedition, E. C. Stirling. Part IV, p. 51.
Northern Australians		Natives eat anything that is edible	Native Tribes of the Northern Territory of Australia, Spencer. MacMillan & Co., 1914, New York
Brazilian	Unusually liable to decay	Milk, cheese, farina, sun dried meat. Food is bolted and all expectorate rather excessively	Highlands of Brazil, R. F. Burton. Tinsley Bros., London
Eesa or Bedoin branch of Somal	Teeth do not project, are poor and stained from surat tobacco	Mutton, milk, butter, rice millet bread, dates	First Footsteps in East Africa, R. F. Burton. Dent & Co., Londan
Egyptians,* Ancient and Modern	Toothache common	Diet mainly vegetables, bread of millet or maize; milk, eggs, melons, beans, lupins. The cleaning of teeth a religious rite	Account of Manners and Customs of Modern Egyptians, E. W. Lane. John Murray, London
Filipinos	Caries present in 20.90 per cent. of cases examined	Diet includes great quantities of sugar	Ottofy Lancet, 176, 1909, 263.
Friendly Isles	General good teeth, but poorer than those of other nations	(See natives of Island of Otaheite)	Captain Cook, Voyages of Discovery. Dent, London. Edited E. Phys.
Gallois Tribe	(See Somal)	Gourds the only vegetable Habitual drunkards. Habitually use the tooth stick	First Footsteps in East Africa, R. F. Burton. Dent, London
Iggorots	Caries present in only 2.05 per cent. of a large number of cases examined	Camotes, a sweet potato, 30 per cent of diet. Rice, 30 per cent of diet. Other vegetables, maize, etc. 30 % of the diet. Fish, meat and eggs, 10 per cent Sugar is distasteful and is not used	Ottofy Lancet, 176, 1909, 253
Otaheite	White and regular	Mainly carbohydrate in character. Teeth cleansed six times a day	Captain Cook, Voyages of Discovery. Dent, London. Edited E. Phys.
Natives of Sarawak	"Toothache and decayed teeth are almost unknown"	Rice, yams, cucumbers, fowls, and fish	Natives of Sarawak and British North Borneo, H. L. Roth. Truslone & Hansone, London, p. 77
Somal	Scattered teeth considered a sign of warm temperament	(See Eesa)	First Footsteps in E. Africa, R. F. Burton. Dent, London
Somal	Teeth do not project, are poor and stained by tobacco	Teeth are cleaned by tooth stick. Flesh, holcus, few vegetables. Millet beer	First Footsteps in East Africa, R. F. Burton. Dent, London
Tasmanians	Among forty-two natives examined all had "very good teeth"	Refuse European food; eat rats, many vegetables of various kinds. Have enormous appetites. Meals are eaten with great greediness and great quantities are eaten at one time. Live chiefly on animal food.	Aborigines of Tasmania, H. E. Roth. King & Son, Halifax, England, pp. 8 and 87.

TABLE C—Continued

Race	Teeth	Diet and Habits	Authority
Tasmanians	Are reported by Cook LaBallardiere and Widowson as having good teeth		
Tasmanians	Teeth much worn; decay uncommon	Soundness of teeth due to chewing hard and tough material	Daily Life of the Tasmanians, Bonwick
Makololo	Beautiful teeth	General mixed diet, including:—porridge, milk, butter, corn, honey, beer, wild fruit, elephant meat	Narratives of an Expedition to the Zambesi, etc., David and Charles Livingstone, John Murray, London, 1865
Kebrasbasa		Fowls, eggs, sugar cane sweet potatoes, tomatoes, rice, maize; Kaffir corn	Ibid.
Manganja		Millet, maize, beans, nuts yams, rice, pumpkins, cassava, sweet potatoes, etc.	Ibid.
Matumboka	"Teeth here are more solid and often wear down to the gums in old persons without decay. Cases of toothache not all uncommon, nevertheless"	Mixed diet	Ibid.

* Note that Patrick quoted by Pickerell cites the Egyptians as one of the humane races, the ratio of caries in 3,306 teeth examined being only 3.418 per cent.

methods of stimulation is the use of an electric current which has been passed thru an inductorium, and experiments along these lines were projected.

In this series of experiments it was desired to determine what comparative differences would result in titratable acidity and alkalinity by the use of the electric current at different parts of the oral mucosa. It has been demonstrated that the mechanical stimulus obtained by the chewing of paraffin excites a flow of saliva which is markedly different from that found normally in the mouth. With the employment of the electric current, obtained from an inductorium, a third sample was secured which differed in titration value from either the normal resting or paraffin saliva. The amount of current used and the locality at which it was applied did not appear to produce any marked deviation from the general result. Altho the strength of current varied with different individuals, only that strength was used which at the end of two minutes produced a tingling sensation at the point of contact. Whenever this amount was appreciably increased it was found to be prejudicial to salivary activity, as an unnecessary nervous tension was thus produced.

The apparatus consisted of two Elison Lelande cells, type Z connected in series with an inductorium and a key. The electrodes consisted of two platinum points mounted on a vulcanite handle. The electrode was applied to the mucous membrane at some predetermined point and the saliva thus obtained titrated in the usual manner. The different localities at which the electrode was applied were, first, the opening of Stenson's duct opposite the upper second molar in the buccal mucosa; second, the openings of Wharton's ducts and the ducts of Bartholin on either side of the frenum linguae; third, on the dorsum of the tongue at the juncture of the posterior with the middle third near the apex of the V formed by the convergence of the two lines of the circumvallate papillae; fourth at the gingivae. In applying the current at the bilateral structures one side was

stimulated for two minutes and then the opposite side. No inflammation of the mucosa at the point of contact was developed at any time. The results of these experiments are reported in table 7. In the first column is noted the serial number of the patient, in each column "A" the alkalinity of 10 cc. of sample expressed in cubic centimeters of N/200 HCl.; in "B" the acidity of 10 cc. sample expressed in cubic centimeter of N/200 NaOH., and in "C" the total neutralizing power. The salivary factor appears whenever the paraffin saliva was taken; the distance of the secondary coil from the primary shows the comparative strength of the current and is expressed in cubic millimeters.

The data submitted demonstrate first, that the alkalinity of the electrically excited saliva is lower than that of the paraffin sample; second, that the acid-

TABLE 7

"Electrical Stimulus"

Number	Normal Resting Saliva			Paraffin Stimulated Saliva			Electrically Stimulated Saliva			Factor	Coil	Date
	HCl	NaOH	T.N.P.	HCl	NaOH	T.N.P.	HCl	NaOH	T.N.P.			
	A	B	C	A	B	C	A	B	C			
Stenson's duct												
	cc.	cc.		cc.	cc.		cc.	cc.			cm.	
E 1	14.05	5.25	19.30	25.50	2.35	27.85	4.80	16.50	21.30	69.30	27.50	December 28, 1915
E 2	15.30	5.80	21.10	34.40	3.25	37.65	18.20	5.50	23.70	56.50	25.50	January 5, 1916
E 2	4.10	15.30	19.40	24.50	3.40	27.90	9.45	11.00	20.45	69.50	27.00	December 28, 1915
E 4	6.60	13.75	20.35	24.15	4.75	28.90	7.55	17.75	25.30	70.40	30.00	January 7, 1916
E 5	17.70	24.75	24.45	32.75	3.35	36.10	17.80	8.50	26.30	117.60	27.00	January 10, 1916
E 6	19.50	6.50	26.00	48.30	1.20	47.10	25.45	2.50	27.95	55.20	27.00	January 8, 1916
E 7	8.75	9.80	18.55	25.20	4.55	29.75	10.65	7.00	17.65	62.40	27.00	January 12, 1916
G 8	20.40	3.30	23.70	39.80	0.50	40.30	27.10	11.30	38.40	58.80	27.00	September 1, 1916
Wharton's and Bartholin's ducts												
E 1	9.00	9.50	18.50	17.75	5.50	23.25	10.75	5.30	16.05	79.60	30.00	January 5, 1916
E 2	16.95	1.30	18.25	34.70	3.75	30.95	20.15	1.50	18.65	58.90	32.00	January 12, 1916
E 4	17.80	4.60	22.40	19.40	8.25	27.65	15.90	7.10	23.00	81.00	29.50	January 8, 1916
F 1	16.25	6.95	23.20	29.50	2.70	32.20	19.05	6.25	25.30	72.09	30.00	January 15, 1916
F 2	21.10	3.40	24.50	34.20	1.90	36.10	19.30	3.10	22.40	67.90	29.75	January 16, 1916
F 3	20.10	3.10	23.20	24.15	2.75	26.90	15.00	2.30	17.30	86.20	29.50	January 17, 1916
F 3	16.10	6.25	22.35	22.00	1.85	23.85	14.40	2.50	16.90	93.70	29.50	January 18, 1916
F 5	17.70	4.50	22.20	37.40	2.50	39.90	14.25	3.95	18.20	55.70	29.00	January 18, 1916
G 7	22.85	2.50	25.35				19.90	2.70	22.60		29.50	February 22, 1916
G 8	15.15	6.50	21.65	44.85	1.50	46.35	27.55	11.00	38.55	46.71	27.80	July 22, 1916
G 8	26.05	7.75	34.80	44.55	3.10	47.65	26.40	11.80	38.20	74.70	26.00	August 16, 1916
Tongue												
E 1	8.70	10.50	19.20	16.75	4.85	20.60	11.35	4.45	15.80	93.20	28.00	January 22, 1916
E 4	11.00	14.70	25.70				12.50	8.40	20.90		28.50	November 11, 1915
Gingivae												
E 6	18.25	7.60	25.85				22.95	3.30	26.25		31.20	January 10, 1916
E 7	10.50	8.15	18.65				12.25	5.75	18.00		29.50	January 13, 1916
G 43	17.25	8.00	25.25	21.60	2.75	24.35	16.55	5.35	21.90	103.70	25.50	November 5, 1916
E 5	18.40	23.55	41.95				25.55	6.90	32.45		31.00	January 11, 1916

ity of the former is relatively higher than that of the latter; and third, that the neutralizing power of the saliva obtained by electric stimulus is lower in every instance than that collected by the paraffin method. This fact indicates that the use of the inductorium does not promote salivary activity to the same extent as the paraffin.

It was hoped that differential areas of irritation in the mouth could be demonstrated by means of this electrical stimulation for it was desired to determine whether one part of the oral mucosa is more sensitive to extraneous influences than another, so that a local irritation in one circumscribed locality would tend to produce a greater change in the salivary neutralizing power than in another locality. The experiments, however, so far reported, have failed to supply any conclusive evidence.

The repeated use of the inductorium on one individual produces a marked effect upon the relationship of the normal resting saliva to the activated paraffin saliva. This electric irritation alters the factor in a few days from one which is comparatively low to one with a much higher valuation. As examples of this condition may be cited subjects E1, E4 and G8. In the first instance the experiment was commenced on December 28, 1915. The Salivary factor at this time was 69.3. Electrical stimulation was applied and after eight days a second test was made. The normal resting saliva and the paraffin saliva were first collected and the application of the current repeated. It was found that the factor rose steadily from 69.3 to 79.6 and finally to 93.2. Similarly with E4 the factor at the start was 69.5 but rose in eleven days to 81.0. For subject G8 the factor evaluated on July 23, 1916, was 46.7; on August 1 it had risen to 74.7. One month later it had returned to nearly the same ratio as at the start and duplicate samples on successive days gave a factor of 58.8. The result reported are based on duplicate analysis and on duplicate samples obtained on successive days.

The determination of the reaction of the taste impulses upon salivary secretion was attempted by comparing the result obtained with a normal resting sample with those secured by the use of different substances of marked taste. Howell (12) and other investigators describe the taste sense as being composed of four fundamental sensations, namely, bitter, sweet, acid and salty. Tastes other than these are combinations of any two or more of the primary sensations and produce, therefore, a mixed stimulation of the sense organ. There was used for this experiment quinine on one day and sucrose on the second or third day following.

In securing the samples there was collected first a resting saliva and then the saliva secreted from the use of the taste stimulant. The results are reported in table 8. In the first column appears the subject number. Figures in columns A, B and C represent respectively the alkalinity, acidity and total neutralizing power of each sample. It may be stated in general that the action of sucrose, the sweet stimulant, tends to lower the total neutralizing power of the saliva. Quinine, the bitter stimulant, appears to produce the opposite condition, yielding saliva resembling that secreted in response to the stimulus of chewing paraffin. The well known work of Miller (13) demonstrates that fermenting carbohydrates such as would be found on the teeth tend to promote caries. From the above experiments it would be logical to infer that saliva favors the condition as well, since the neutralizing power of the sucrose-stimulated saliva approaches that of the normal resting saliva, and a factor evaluated on this basis would be of a magnitude corresponding to that which under paraffin stimulus would indicate the presence of caries.

TABLE 8

Comparison of Effects of Different Types of Stimulation Upon Salivary Secretions.

Number	Saliva Normal Resting			Saliva from Quinine Stimulus			Saliva from Sucrose Stimulus		
	A	B	C	A	B	C	A	B	C
F1	16.25	6.95	23.20	20.65	4.55	25.20	13.80	10.70	24.50
F2	19.55	4.20	23.75	33.95	2.00	35.95			
F2	25.50	5.00	30.50	25.80	3.75	29.55	17.15	8.00	30.15
F2	21.15	7.50	28.65				18.45	5.50	23.95
F3	20.70	3.70	24.40				13.25	8.00	21.25
F3	18.40	5.40	23.80				9.95	8.25	18.20
F4	19.25	4.75	24.00				15.00	6.20	21.20
F5	19.10	5.75	24.85				10.65	8.00	18.65
G7	22.85	2.50	25.35				12.60	3.60	16.20
F1	18.05	4.70	22.75	19.60	13.40	33.00	13.85	7.00	20.85

SUMMARY.

Dialysis of saliva shows that the total neutralizing power is chiefly due to inorganic constituents.

The use of the Van Slyke apparatus in the determination of amino-nitrogen in saliva is a new application of this method. The results so obtained show that there is a definite correlation between the concentration of inorganic constituents, the amino-nitrogen content, and the neutralizing power of saliva; namely, that a high neutralizing power is associated with a correspondingly high percentage of inorganic constituents and with a low percentage of protein.

Data are presented which confirm Pickerill's observations concerning the effect of different constituents of the diet upon dental caries.

The use of the electric current as a salivary stimulant excites a secretion markedly low in alkalinity and correspondingly high in acidity when compared to the saliva resulting from the paraffin stimulus. The neutralizing power of saliva secreted in response to electrical stimuli is less than that secreted in response to the chewing of paraffin.

Differential areas of stimulation in the oral mucosa cannot be demonstrated.

The comparison of analysis of saliva obtained by a sweet stimulus (sucrose) with that obtained by a bitter stimulus (quinine) proves that the former yields a saliva low in neutralizing power and that the latter produces the opposite result, saliva secreted in response to bitter stimuli paraffin saliva in neutralizing power.

In conclusion I wish to express my deep appreciation to Dr. T. Brailsford Robertson for his interest evinced thruout the work as well as for the valuable suggestions offered. My thanks are also due to those students and clinic patients who have provided the necessary material for the experimental purposes.

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PHAGOCYTOSIS, AND ITS PRACTICAL APPLICATION IN DENTISTRY.

By H. G. Chappel, Oakland, California.

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AS EARLY as 1870 certain biologists noticed the presence of microorganisms within the cells of both animal and human tissues. A little later, several observers noticed that some leucocytes contained bacteria, but did not interpret it as a means of protection, but rather as a means of transporting the bacteria thru the infected body.

It remained for Metchnikoff in 1883 to give to the world the result of his observations, in which he claimed that the leucocytes acted as protectors of the animal organism, that they ingested, and digested bacteria which had invaded the animal economy, acting as phagocytes or scavengers. He compared this process of cell ingestion, or phagocytosis of foreign particles, to that taking place in the protozoa. In the Amoeba for instance, the simple jelly like mass of protoplasm moves by means of the pseudopodia toward its food, engulfs it, digests it, and moves on, leaving an indigestible portion. In Sponges, and in the Coelenterates, individual cells still perform the function of taking up food particles and digesting them, but as we come up in the scale of life, we find that cells become more specialized, and the digestion of food takes place in the cavity of the stomach and intestine, with the help of various digestive juices which are poured upon it. While certain specialized cells take care of the nutritive function, other cells develop the function of protectors of the animal from invasion by microorganisms which will produce disease unless overcome. It is to these cells that Metchnikoff has given the name of phagocytes.

From what has been said of the Amoeba, Sponges and Coelenterates, you can readily see that the phagocytic cells of man are descendants of cells whose normal function was to digest *intra-cellularly,* and thru them we still possess this method of digestion side by side with the *extra cellular* digestion which occurs in our stomach and intestine.

At the time when Metchnikoff began his study of this subject, pathologists held very complicated views of inflammation, which involved complex coordinated reactions of vascular and nervous systems, and his primary purpose

was to observe reaction to irritations on some animal of simple form that was devoid of specialized vascular and nervous apparatus, so he began his observations on a small fresh water crustacean, the Daphnea.

In this small animal he studied the reaction which took place upon the introduction of yeast cells. He found that a struggle took place between the ameboid leucocytes of the crustacean, and the infecting agents, and determined that complete enclosure of the yeast within the leucocytes assured protection to the animal, while a failure to do so either from fortuitous causes, or because of too large a quantity of the infecting agents, resulted in disease and rapid death.

Since this beginning, a tremendous amount of experimentation and investigation have taken place. The phagocytic theory was attacked by a number of noted pathologists, and this stimulated greater research,—on the one side in defense of the theory, and on the other to disprove it. While much still remains to be discovered as to the manner in which both humans and animals resist or overcome disease, yet enough has been proven to give us a good working knowledge to build upon, and the phagocytic theory is now generally accepted, altho some still maintain that various antibodies in the blood play the principle role, and that the phagocytes digest only dead bacteria. In this paper we cannot take up the claims of those who present opposing theories but rather adopt the view which Zinsser takes when he says "It seems reasonable to classify both the phagocytic action of body cells, and the formation of antibodies, in the blood plasma, primarily as emergency devices for the digestion of foreign materials, both formed and unformed, which, under abnormal conditions, penetrate into the physiological interior of the body (blood stream or tissue spaces,) and must be disposed of." (1)

Phagocytosis is not confined to the white blood corpuscles. The leucocytes of the circulating blood are known as motile phagocytes, while others are known as fixed phagocytes. These fixed phagocytes consist of certain connective tissue cells, endothelial cells, splenic pulp cells, certain cellular elements of the lymph nodes, neuroglia tissue, and all phagocytic cells which are ordinarily confined to some definite localization in the body.

Metchnikoff further classifies these phagocytic cells into *microphages* and *macrophages*. The *microphages* are the polymorphonuclear leucocytes of the circulating blood, while the *macrophages* include the fixed cells, and the large mononuclear elements of the blood,—in fact all phagocytic cells except the microphages.

"While no *absolute* functional differentiation is possible between the two, it is true, in a general way, that the microphages are concerned primarily with the phagocytosis of bacteria, and especially of those which invade acutely, while the microphages are concerned especially with the resorption of cellular detritus, foreign bodies, and such bacteria as are more chronic in their activities or are peculiarly insoluble. On the other hand, microphages *may* take up foreign particles and bacteria of *all* kinds under suitable conditions." (1)

The small lymphocytes, and most-cells of the circulating blood are considered non-phagocytic, or possessing phagocytic, powers under exceptional circumstances only, but this does not mean that they may not play their part in defense of the body, for it has been noted that especially in tuberculosis, they generally form the majority of the cellular elements that accumulate at the site of the lesion.

Now let us see what takes place when an emulsion of pyogenic staphylococci is injected into an animal subcutaneously, for by noting the changes that take place

we can readily grasp the importance of the leucocytes, and see that they are the chief elements in overcoming an infection.

Very soon after the injection, the site of puncture will become reddened and swollen, and microscopic examination will, within a few hours, show a swelling and engorgement of the blood vessels.

"The injected cocci will be found to lie partly scattered in the tissue spaces, in part within polynuclear leucocytes and connective tissue cells, which have begun to digest them. The tissue spaces will be swollen and stretched by the exudation of blood serum from the vessels. This condition will begin in from 4 to 6 hours after injection, and increase during the next 24 hours in extent and severity according to the quantity and virulence of the cocci injected.

After from 12 to 48 hours there will be seen the results of an active and destructive struggle between the invading bacteria and the defending cells. In the center of the area of invasion, tissue has been destroyed and disintegrated. Amid the necrotic detritus, closely packed, lie leucocytes and cocci, and active phagocytosis has taken place. In some cases the intracellular bacteria appear swollen and disintegrating, in others, the leucocyte itself overcome by the larger number of bacteria it has taken in, becomes vacuolated, indefinite in outline, and apparently is being itself destroyed. The presence of blood serum, which is aiding in the destruction of bacteria, both by its bactericidal powers and its re-enforcement of the phagocytic process, renders this mass fluid or semi-fluid, and the whole mixture constitutes what is known as pus. Around the periphrey, cocci and leucocytes becomes more scattered and sparse, and bacteria, together with leucocytes loaded with cocci, may be seen lying within large mononuclear cells (macrophages.) Whether the process goes on to further extension, or is eventually walled off into a distinct abscess by the formation of granulation tissue and new connective tissue, depends upon the balance of forces between attacking agent and defensive factors.

If we inject a similar emulsion of bacteria into the pleural or peritoneal cavity of an animal, a process similar to that just described will be observed.

Normally the peritoneum contains a small amount of serous fluid and a moderate number of white blood cells, chiefly lymphocytes. When a bacterial emulsion is injected into the peritoneal cavity there follows a brief period, during which there is a diminution of the free cellular elements in the peritoneal fluid. At this time there is a clumping of the cells in the folds of the omentum and mesentery, a transient stage of flight away from the point of injury. This, however, is soon over. Within one to two hours, an active immigration of leucocytes into the serious cavity occurs, and if, during the next 12 to 24 hours small quantities of fluid are, from time to time, withdrawn with a capillary pipette, a rapid and constant increase of leucocytic elements, chiefly of the microphage or polynuclear type, is observed.

If the injected emulsion of bacteria has been small in quantity and moderate in virulence a rapid phagocytosis gradually rids the fluid of micro-organisms and within 24 hours after injection, few, if any, free bacteria are visible.

A little exudate taken at this time shows large numbers of microphages, varyingly crowded with well preserved and disintegrating bacteria. Some of the phagocytes having literally taken up more than they can digest, are vacuolated and disintegrating, but in general, the victory lies with the cells. A little later large mononuclear elements appear, and here and there will be seen to take up dead leucocytes together with injected cocci. In this way gradually a cleaning out of the peritoneum takes place,

the animal recovers and the peritoneum returns to normal.

If on the other hand the bacteria injected are in larger doses and of greater virulence, we shall find that after a period of active phagocytosis, there may be a gradual increase of bacteria over leucocytes. The phagocytic cells are found to be undergoing degeneration in larger numbers, the free bacteria increase and the impending death of the animal can often be foretold by the appearance of the exudate. Finally the peritoneal fluid may consist chiefly of free and rapidly mutilating bacteria, with a practical absence of phagocytic sells." (1)

The part played by these phagocytic cells in resisting invasion and defending the body, consists of two phases—First, the active motion of the cells toward the point menaced—Second, the act of ingestion of the invading organism.

It is only natural for us to ask what attracts the phagocytes to the point where they are needed? For they invariably turn towards it just as the branch of a plant turns toward the light or its roots toward the ground.

The action of these "leucocytes toward the invading substance indicates a sensibility on the part of the cell to changes in its environment incited by the foreign agents, and since the stimuli most likely to reach the leucocytes and bring about this alteration in the direction of their movements are chemical in nature, the phenomenon is spoken of as chemotaxis." (1)

If the changes in the direction of a moving cell is towards the foreign object, thus showing its attraction, it is said to exert a *positive chemotactic action.* If on the other hand it repels, it is said to be *negative chemotactic.*

This property of chemotaxis is of vital interest to us, because any agent which repels the approach of the phagocytes must be detrimental, while any factor which attracts them will act as a powerful means of defense.

Leber in his work on "Inflammation" found that powdered copper and mercury, actively attracted leucocytes and that dead bacteria exerted a similar positive chemotactic influence, while Buchner succeeded in extracting substances from various bacteria which possessed similar properties.

It appears from these, and other investigations, that the power of stimulating positive chemotaxis is a general property of bacterial proteins, equally evident in bacterial extracts, dead bacteria, or the living organisms. It is likely, therefore, that the attraction of leucocytes toward the point of bacterial invasion is, in part at least, due to the properties of the bacterial proteins themselves. That this, however, is not the whole story is evident from the work of Massart and Bordet, who showed that the products of cell destruction and disintegration possess similar positively chemotactic properties. This is true not only of the products of disintegrated tissue cells, but of those of the destroyed leucocytes themselves. Thus it appears that when any injury of tissue occurs, a stimulus which attracts leucocytes takes place, even when the injury is not accompanied by bacterial invasion. This would explain the participation of leucocytes in reactions to injury and in inflammations not of bacterial origin, and thru local accumulation following the injection of insoluble inorganic substances.

When bacteria are actually present, however, the added stimulus due to the diffusion of bacterial proteins probably increases the process to a degree often sufficient to meet the added requirements for protection. Following this, both the destruction of tissues, of bacteria, and of leucocytes, may together exert a cumulative chemotactic power which continues the process proportionately with the extent of the lesion. (1)

But we must not go away with the idea that bacteria attract their enemies

and have no means of protecting themselves, for observations made in some diseases "point strongly to the existence of substances of negative chemotactic influence which protect the bacteria, not merely from phagocytosis, but from that necessary forerunner of phagocytosis, the approach of the leucocyte itself." (1)

In order to make this information of practical benefit in our every day practice, we must, in treating any given case, try to determine what the condition is which now exists, and then determine what we can do to promote active phagocytosis. This must be our guide in the selection of any remedies used. I have sought for records of experiments tried upon animals in order to determine the chemotactic influence of various anticeptics upon phagocytosis, but have had little success. I find a record of work done in the Pasteur Institute by Massart and Bordet in which capillary tubes containing various substances were inserted under the skin of the frog. Two medicaments used in dentistry were among those tested, they were lactic acid, and glycerine, but both these substances repelled the leucocytes. (2)

The result of researches by Hamburger of the University of Gruningen, Holland, published this year, showed that iodoform in small quantities mixed with a 0.9% common salt solution increased phagocytosis. The method used in the investigation was this—white corpuscles from the blood of a horse are transferred to various media mixed with very small particles of carbon. After having stood some thirty minutes in an incubator at body temperature, a great many of the cells have eaten up carbon. Microscopical preparations are made and it is ascertained what percentage of the leucocytes have taken up carbon. The percentage is the measure of the degree of phagocytosis, and gives the value of the influence the various agents used, on that function of life.

It was found that when the leucocytes were placed in a 0.9% Na. Cl. solution that 43.8% of the leucocytes had taken up carbon. When iodoform was added in the proportion of 1 to 100,000 the percentage was raised to 58.2%. When added in the proportion of 1 to 500,000 the percentage was 61.4%. When added in smaller quantities the percentage began to drop again, but even when there was only 1 part of iodoform to 5,000,000 of Na. Cl. solution the percentage was still above that of the Na. Cl. solution alone. Therefore there seems to be no doubt but that iodoform in dilute solution promotes phagocytosis, but the question arises: How can this favorable effect be explained? The investigators say that it is not due to the iodine content, as they have found that iodine is noxious in a high degree. They suggest the following interpretation —that the outer layer of the cells consists of a fatty substance, a so-called lipoid surface. Iodoform is soluble in fat and it is obvious that such a surface will grow more soft and flexible after having absorbed iodoform, and consequently the plasticity and mobility will be facilitated. They say that if this theory is correct, then other substances soluble in fat, such as chloroform, alcohol, camphor and benzene should show the same results. Their experiments show that they do,—chloroform giving the best results when added to the salt solution in the proportion of 1 to 100,000. This warning is added, that these substances, which, when applied in very small doses show a stimulating effect, paralyze when given in greater quantities. (3)

The results obtained from these investigations, prove to us that if we wish to get the best results from our treatment of diseased conditions we must study to apply those remedies which will aid in promoting phagocytosis instead of hindering it. Evidently strong antiseptics have no place in accomplishing this end.

Let us see how surgeons are meeting

this problem. From ten to twenty years ago strong antiseptics were used to wash the part about to be operated upon, scrubbing with green soap, washing with alcohol, packing with a bichloride of mercury pack, sometimes the parts were washed with bichloride of mercury solution 1 to 1000 or in some cases even 1 to 500. I read recently in a text book on surgery published in 1891, where the author stated that he filled the abdominal cavity with a bichloride of mercury solution 1 to 18,000 removing it and refilling three times in succession. (4)

Do surgeons use these methods now? No. They have proven that it is easy to be far too liberal in the use of antiseptics, especially the stronger ones, and thus hinder phagocytosis rather than aid it.

In a report recently printed in the British Medical Journal by a consulting surgeon who is serving in France near the front, he says that he is compelled to acknowledge the inefficiency of antiseptics when used as preventive or disinfecting agents in badly infected, lacerated wounds, no matter what kind or strength of antiseptics used, but that the resisting agencies of a patient's own body are far more effective in dealing with a local infection than any antiseptic solution, powder, or paste introduced into it from without. That organisms, which have invaded the tissues are not killed by the antiseptic as such, unless the antiseptic is sufficiently strong to destroy the tissue which they have invaded, but all successful treatment of infected wounds depends on calling forth the physiological forces, the protective elements of the body whether fluid, or cellular, or both.

In place of antiseptics, they are irrigating the wounds with either isotonic or hypertonic salt solution, but these solutions must be brought into contact with every infected part of the wound.

The hypertonic solutions are said to stimulate a flow of lymph containing antibodies, thus bringing about what is known as lymph lavage, while the isotonic or physiological salt solutions, stimulate diapedesis, bringing a concentration of leucocytes into these tissues.

Should the infection be a streptococcus infection, the *isotonic* salt solution must be used, because the streptococcus thrives in lymph, but finds the phagocyte a deadly enemy. If it is a multiple infection, the hypertonic salt solution is used.

The hypertonic salt solution is a 5% solution of Na. Cl. and sometimes 0.5% of Sodium Citrate is added. Iodin is used on skin outside of wound. This is the method giving the best results, so he states. (5)

In view of these facts does it not appear to you that many in our profession are using antiseptics far too strong, and trusting to them rather than to nature's methods of resisting and overcoming infection?

In the treatment of antral infection where it is possible to wash thru from mouth to nostril, this should be the ideal place to use a salt solution and thus promote healing in nature's way.

After the extraction of teeth the salt solution is of great aid and I consider it far more preferable to any of the antiseptic mouth washes that are on the market.

In the treatment of pyorrhea it is high time for us to abandon lactic acid, trichloracetic acid, ammonium fluoride, etc.; which have been used to dissolve any calculus that had been overlooked upon the root. It may be that this result was achieved in some instances, but at what cost? The destruction of considerable soft tissue, and the etching action of the acid upon the cementum which must certainly destroy the life of the cementum superficially if any life still remained in it, and thus prevent healing. If it is absolutely necessary to irrigate these pockets after scaling the teeth, (and some hold that is is detrimental,)

it is only common sense to avoid the use of remedies which destroy animal tissue cells as well as the bacteria, and use the normal salt solution. I believe you will achieve better results in shorter time.

When it comes to treating alveolar abscesses we have a problem on our hands as to the best method of applying the knowledge we have on this subject.

We have the hard tissue of the tooth itself to disinfect, and here the phagocytes cannot help us. We have the tissue in the periapical space also infected. Here the phagocytes must play an important role. How shall we secure the disinfection of the tooth and yet do no damage to the tissues at the apex?

I wish that I could bring you a record of experiments tried, to determine the chemotactic influence upon phagocytes, of the various antiseptics which we use, but I cannot. I am inclined to think that all antiseptics will be found to possess negative chemotactic powers, but I cannot say that that has been proven yet.

We have tho, the experiments conducted by Drs. Black and Peck, some years ago, as to the effect of various antiseptics on the skin of the body. These experiments were repeated more recently, and were reported to us in Jan., 1916, by Dr. Arthur Black.

In these experiments it was proven that the formo-cresol solution took the lead in irritating effects and in causing death of the tissue, while Oil of Cloves showed the least amount of irritation or discomfort. Beachwood Creasote ranked next to Oil of Cloves in being non-irritating.

In view of these facts it is only reasonable to abandon whatever causes marked destruction of tissue, and in use that which is least irritating, provided we can destroy the bacteria in the tooth by that method.

Let us turn to the report of some other experiments conducted by Drs. Black and Peck in 1898 testing the potency of various antiseptics in preventing the growth of organisms obtained from the saliva of members of the class of 1898, and infecting broth, which was kept in the incubator and tested for three days. It was found that Formalin prevented growth when present in the strength of 1 part to 1400 parts of the broth. Beachwood Creasote was effective in 1 part to 1280, Oil of Cloves 1 part to 1150, Oil of Peppermint 1 part to 875. Black's 1-2-3 mixture 1 part to 454 2-7 parts, Phenol 1 part to 338 8-9 parts, Eucalyptol 1 part to 116 2-3 parts, Bichloride of Mercury was effective in 1 part to 36 2-3 parts of the broth.

These experiments show that Oil of Cloves being effective in a strength of 1 to 1150 should be sufficiently strong to destroy bacteria without doing very serious damage to the soft tissues surrounding the apex of the root. The fact that this remedy placed upon an irritated and exposed pulp, will soothe the pain, proves its non-irritating qualities. Oil of Peppermint which is only slightly irritating, and is effective in a strength of 1 to 875 can be used in the anterior teeth where there is danger of staining from the Oil of Cloves. Eucalyptol is less effective, requiring a strength of 1 to 116 2-3, but this should be sufficiently strong to destroy the bacteria present.

We may use strong antiseptics in the pulp chamber to disinfect putrid contents of a root canal, but one thing that we must remember in using these strong antiseptics in a tooth for disinfecting purposes is, that while we may not do any harm to the dentin by their use, yet we have a layer of cementum at the apex of the root, that varies in thickness from a mere line in a young person, to as much as a millimeter in thickness in elderly people. This layer of cementum may retain its vitality, or it may not. If vital, we should endeavor to conserve its vitality by not allowing agents to come in contact with it that we are sure will destroy it.

If now we have disinfected the hard

structure of the tooth, we must look to the phagocytes to clear up the infection in the soft tissues.

The amount of dead tissue in the apical region should have a positive chemotactic influence on the phagocytes and promote healing.

If the abscess has assumed the chronic form it will be found that the area is walled off and surrounded to a great extent by the lymphocytes and that very few microphages are present, so in this condition it is wise to destroy a small amount of tissue in order to promote an active phagocytosis. If the fistulous tract is thoroly irrigated by a normal salt solution in order to remove all detritus and pus, and then followed by a small amount of phenol carefully injected, and stopped as soon as it appears at the fistula, and the tooth sealed, this should destroy enough tissue to start phagocytosis.

I have secured excellent results by applying this treatment, letting the tooth rest about four days to a week, and then repeating it, then dry out root canal, and fill. What the final results of this method of treating chronic abscess will be, only time and the X-ray can tell, but I feel that I am proceeding along logical and scientific lines.

The treatment of blind alveolar abscess will call for some agent that is slightly irritating in order to break up its chronic tendency and promote active phagocytosis.

I have not been able to give you as definite information how to proceed in each specific instance that you will have to contend with, as I could wish to, for the data is not yet at hand, but I have tried to present in a general way how the forces of nature work to resist and overcome infection, and thus direct your thoughts and endeavors to work intelligently with those forces. You may be able to solve some of the problems that are still unsolved.

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COST ACCOUNTING FOR DENTISTS.

By Dr. L. Jay Walker, Grafton, West Virginia.

Mr. Chairman, Fellow Members of the West Virginia State Dental Society and Guests:

IN THE beginning it was my intention to present during the Clinic hours of the program, figures taken from my books and cost sheets showing a few of the facts herein contained,—but I found in order to make them comprehensible it would require more talk than I could well put across under such circumstances. By the time I got everything down that I felt I just had to say, I had a paper. We will call it "The Brass Tacks of Getting at the Cost of Conducting a Practice and That of Doing Certain Dental Operations."

When one proceeds to get at the cost of conducting their practice where there is not a thoroly good system of recording all the expenditures one is inclined to get at it in about this way:

PER MONTH.

Rent, Heat, Light, Janitor, Power and Water	$ 35.00
Assistant	20.00
Laundry	2.00
Sundries	1.00
Dental Supplies	50.00
	$ 108.00
	12
	$1296.00

Using the same method my own operating expenses would appear to be as follows, and I beg leave to use the figures of my own practice because it is the only practice about which I could be so definite.

Rent, Heat, Light, Janitor, Power, Water	$35.00
Assistant	35.00
Laundry	2.00
Dental Supply House bills average per month for running supplies one year	76.00
Phone (does not include tolls)	2.00
Sundries (this is the only item guessed at in this schedule)	5.00
	$ 155.00
	12
	1860.00

This last table is exactly correct so far as it goes, with the exception mentioned. And you will please take a little time to note that it appears to be fairly complete, a few apparently inconsequential things left out. Now that is just as much system as there is about the average dentist's method of getting at his expenses.

To be exactly correct, the cost of conducting the same practice is $2897.00. This figure is averaging the costs of 1914-15 and 16. It does *not* include interest that investment in equipment and education would earn, nor the 4% reimbursement on cost of education. These three items should total $420.00.

Notice the difference is $1130.00 or nearly $100.00 per mouth between the estimated cost way (table 2) and the actual figures from the same practice

except the sundries item, which casually seems liberal enough.

It seems incredible. And it is exactly how unbelievably far one misses the truth when one gets at his expenses with ever so honest intent by the first methods illustrated. And will deceive one to the extent of about $100.00 per month as to the size of ones salary. Consequently there is a surprisingly small amount in the assets column at the end of the year. About $1200.00 less than should be saved out of a $300.00 salary which is really only a $200.00 salary. But one can blame it all on the High Cost of Living and let it go at that. Here I believe is where a lot of the money goes that we cannot account for not having.

Now let us see how one can make such a mistake. In table two the $76.00 per month was the average of the bills for the year 1916. Whereas the average for 14-15 and 16 is $90.00.

The sundries item contains few expenses that are right large, and very many so small that one hardly thinks worth while considering, and many more that one wouldn't guess in an hour of profound thinking. Some of them are as follows: Society fees, mileage and expenses incident to attending Dental Society Meetings, Education, Fire Insurance, Accident Insurance, Taxes, Business Donations, Charities of certain class, Advertising, Interest, Stationery, Postage, Amusements, Books, Ledger Sheets, Examination Pads, Magazines, Electric Light Globes, Gas Mantles, losses by bad accounts, make-overs, work done to make satisfactory after a bill has been rendered. Commissions for collections, and others will turn up.

I want to say a word about losses of all classes. They can't be left out in computing the cost of doing business because, it takes productive time to make them up, and there are just so many productive hours, no more. One cannot increase their number *without losing something essential elsewhere.*

That one cannot correctly get at one's average expense by taking the figures for one month, or one year is well demonstrated by the following. The figure of $2897.00 is an average yearly expense based on three consecutive years, 1914-15-16: In table No. 2 one year's average "Dental Supply" bills was $76.00, while for a period of three years that item averaged $90.00. A difference of $14.00 per month, $168.00 per year.

The difference in income between 1915-16 is $115.00. The difference in expenses was an even $900.00. The difference in income between 1914-16 is $1248.00. The difference in expense is $192.00.

Get this too: The average *income* for the four years preceeding 1914 was $2153.00 less than the average for the following three years, while the average expense for the same four years was only $236.00 less.

Average Income.		Average Expense
1914)		)
1915)=×		)=2849
1916)		)
1910)		)
1911) =×	—2153)	=2661
1912)		) ——
1913)		236 less.

These figures emphasize the importance of a *continuous* record of expenses as well as income. And that the expenditures be *classified* or there could be no definite knowledge of the reason for the relative differences shown, consequently of much less value.

Now we will turn our attention to the income of a practice which is even more important. After knowing what one's outlay will be or has been, one has the essential for systematically providing for an income to take care of that expenditure, plus a reasonably definite profit. We must here consider how many of the hours spent in our offices can be made directly productive. The productive hour question is a common pitfall,

that sidetracks many of us, and makes us miss every worthy ideal we ever had regarding our professional life.

A sufficient remuneration should be secured from hours spent directly in the service of the individual to compensate for additional hours of service to the masses, some of which must be devoted to the education and otherwise improving both the individual Dental Surgeon and his profession as a whole, that he may advance in usefulness and in turn measure up to the worth of his fees to the individual. There is so much of truth in this statement that much is missed unless slowly gone over and carefully considered.

One spends hours each day in work that is necessary yet cannot well be made to command a fee that is readily chargable to an individual. This is not productive time. Many irregularities occur that convert what would otherwise be productive time into unproductive.

One can and often does speed an automobile forty-five or fifty miles an hour for a short period of time but to drive that speed for seven or eight consecutive hours will prove disastrous to something. Only experienced drivers know that fifteen miles is the limit of endurance and safety without sacrifice in successive hours of driving thruout the year, and that only on fair roads. None of the men who have made a careful study of this question admit more than 1200 productive hours. Most of them place it at 1000. Personally I thought the statement ridiculously wrong when I first heard it. An attempt to disprove it over a short period of time (several months) made me feel that I was nearer right than the low one; but a continuation of the observation to several years convinced me of my error. I am now thoroly convinced that the man who can make 1200 hours productive, year after year without sacrificing some essential is well above the average, and would be an eminently successful man in any business his judgment would undertake.

If one makes more than 1000 hours productive in a year and otherwise improves his time in a professional direction he works hard enough to earn more than $250.00 per month salary which in these days is a very ordinary salary, made by many ordinary men, in ordinary trades and who don't look for much respect from the public for the trade or vocation which they are engaged. Now if you will please grant that I am somewhere near right in my statement—that it cost $2661.00 to do $5600 averaging years, and one should add to this $400.00 plus per year interest on investment, education, etc., will make that figure $3000.00 plus.

Supposing one to work 5 hours per day deducting for lost days as follows:

Sundays	52	
Holidays	4	
Conventions, Post Graduate Courses	10	
Half holidays summer months.	8	
Vacation	30	
Average allowance for other causes	10	
Total	114	365
		114
Work days		251

Two hundred fifty-one working days times five hours equals 1255 hours; will require a fee approximating $5.00 per hour to which must be added the cost of gold and teeth in an operation in which they are employed to yield $3600 profit.

If one insists on working six hours per day it will permit a fee of four dollars per hour, adding to it precious metal or teeth costs. Now I know many of us believe we can make six hours productive the year round for every full day we are in our offices and then some. Some of us do, but not as much over that as we think, but let us look for our ideals and see how we have swerved. And are we able to keep the spirit buoyant

enough to desire the exertion necessary for aggressive progressiveness?

And again if you please, believe me there are not more than 1200 hours safely available in the long run in which to earn expense, and bearing in mind there is not a dollar of salary provided for let us see how we will have to head in to pay ourselves a meager salary of $300.00 per month.

Business expenses, we have found to be....$3000.00+
Salary 3600.00

Amount required 6600.00
Hours productive .....1200)6000.00 $5.50

6
—=.50
12

The $3000.00 expenses include $600 plus for precious metal and teeth, a deductive of fifty cents per hour where precious metal or teeth are not used, making the rate $5.00 per hour.

For the benefit of those who have never observed the average time based on considerable number of operations required to do various operations I have prepared from my records such averages. These are taken consequently as they appear on Ledger charts without selection as to case or difficulty. The only selection used was to see that they conformed to the class of operation named. I have chosen only such operations as are very common to all of us, and avoided all that have very exceptional complications of the class I have chosen.

We of course would not render a fee containing the odd fraction of dollars shown in the table.

Description of Operations.	No. of Operations, Ave., and Additional Description.	Average cost of Gold.	Ave. Time.	At $4 per Hour.	At $5 per Hour.
Bridge 2x1	Five P. P. Rem. both Abutm'ts.	$6.25	6:15	$31.25	$37.50
Bridge 2x1	Seven P. Rem. from one Abt.	6.25	5:15	27.25	32.50
Bridge 2x1	Seven No. P's removed	6.25	4:20	23:50	27:00
Gold Crown	Ten Swaged Cusp	1:25	1:5	5.58	6.66
Gold Crown	Ten Carved and Cast Cusp	2.00	1:20	7.33	8.67
Molar Pulp Rem.	Twenty Pulps pathogenic (Roots and Teeth Filled)		2:20	9.33	11.67
Bicuspid Pulp Rem.	Twenty Pulps pathogenic (Roots and Teeth Filled)		1:45	7.00	8.75
Cuspid and Incisors P. Rem.	Twenty P. Path., Roots only filled		1:00	4.00	5.00
Amalgam Fillings	Twenty As they present		:40	2.67	3.33
Occlusal Inlay	Ten Cost Gold	1.75	1:30	7.75	9.25
Mesio, or Disto O. I.	Ten Cost Gold	1.50	2:00	9.50	11.50
M. O. D. Gold I.		2.50	2:00	10.00	12.00
Richmond Crown	Eleven Includes Root Treatment	2.50	4:00	18.50	22.50
Vulcanite Full Denture, upper or lower	Fifteen Plaster Impression, Wax Bite, along the lines of the average practice		3:45	15.00	18.75

In compiling the table I found more than three times as many treatments of pathological pulps, and their removal, and abscesses intents, in the same number of clinical record sheets, covering the same period of time, as I did Bridge operations. Bearing this in mind, in connection with the fact that we all know so well that we depend on the latter for our larger profits, and feel that the former are unprofitable, little do we realize what an awful leak we have in such operations, not only are they time consuming but they take a heavy toll of of nerve force. It requires our utmost skill, care and patience.

Suppose we make two by one bridges for $27.00 (without treating abutments) for one-third of a year or four hundred hours. Proceeds $2000.00 and we treat pathological conditions on the following scale (not counting filling of same). Five dollars for molars, three dollars for bicuspids, and two dollars and fifty cents for incisors and cuspids, which according to the time required by one who has diligently practiced for eighteen years will allow two dollars and fifty cents per hour and we work eight hundred hours or the remaining two-thirds years at such work, proceeds $2000.00. Total year's income $4000.00 which is not a dollar more than the practitioner requires to pay office and living expenses.

There are many chances that those who are not with us today have the cause of it rooted in the facts just given and similar ones. We are inclined to think they don't want to come to our meetings. It is more likely they cannot. Their hours are too lean, consequently have to work too many out to get enough dough to keep up appearances and live. The majority of regular practitioners have it all taken out of them, no vim, no money, no time, and no big idea of their work left by this leak.

Those who will not treat pathological conditions for anything less than four dollars per hour, and can not get that because we, the regulars, persist in doing it for less, become purely Mechanical Dentists, and develop a line of practice that marks them as "Irregulars," consequently they are not here. That is not the worst of it. The public suffers in consequence of their irregular practice. So does the whole profession of Dental Surgery.

If it requires two hours to treat a molar tooth the fee should be ten dollars and why should it not be? If it needs a crown it gets it. According to the same calculation it is worth eight dollars and fifty cents. Do we get it? At four dollars per hour fifteen dollars and twenty-five cents. Again do we get it? If not we assuredly fail in the three hundred dollar per month salary. Any way we make it we lose if the fee is less.

To those who have never kept a careful record of the time spent in various operations thruout a considerable number of consecutive ones there remains a duty they owe themselves, their fellow practitioners, and the public.

We do not profess in our own minds for a minute to make material the basis for fees. If it is not material it must be time. If it is time, what folly it is to guess. Why should we lose a goodly profit made in one kind of operations by a rotten guess on the time required in those of another character? No that is not altogether the reason we lose,—especially on the pathological cases.

I fear we are afraid, have been afraid in the generations before us of our patients and each other because a false standard has been allowed to prevail and we have lacked the courage to overthrow it. It will be overthrown when we get the courage that will be borne of the conviction of the extent of our injuries.

The figures in chart 4 are likely to prove the average time required for the average operator and I believe will be a reasonably correct guide for one's computation of fees until one has found the exact figures in his own case. As to the

rate per hour each must decide for himself. My opinion is that any competent man's time is worth at the very least four dollars per hour as a minimum rate for any hours service and as much more as one's progress and other circumstances will permit, providing he employs such assistance as everyone can get for eight to ten dollars per week to economize time.

I want to add a word about the attitude that a few would-be ultra-ethical practitioners take towards a discussion of this nature with the cry that it savors too much of commercialism.

Making use of a similee, we might say that the country will be served as well in transportation requirements by railroad and steamship companies with skimpy working capital, and revenues that will not permit anything more than the bare upkeep, and allow nothing for extension of lines and equipment, for additional development up to a growing requirement, additional improved cars, ships, machinery, and devices for safety of employes, patients and their property, as will the public's health and dental needs be served by a dental profession whose compensation is too meager: having to work too many hours per year coming to the end of too many days with no plus energy to leave its inclination or fitness to move out of its regular narrowly worn channel.

So long as we are short of time margin because we are compelled to work too many hours to get the necessities for living comfortably and those exacted by practice we cannot grow up to our opportunities. We have not been doing so. We are dwarfed for the want of more time and money.

To expect an overworked, undernourished weakling to measure up to a strong growing man's opportunity for a growing requirement, and to discourage the consideration of the means of obtaining his proper nourishment or to obstruct its application is mighty inconsistent and the part of an imbecile.

When every man gives this phase of his work proper consideration and takes the courage to apply himself accordingly, many obstructions between what we are and what we should be, will be removed and we will go forward to a greater usefulness and better standing among men. I am firmly convinced that he serves best who takes best care of himself. I thank all of you for your patient attention.

Army and Navy

HOW MAY YOU ASSIST THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY?*

By Colonel William O. Owen, M. C., U. S. A., Washington, D. C.

The most important matter to us, for I still love to think of myself as a member of the Army Medical Corps, is for you gentlemen, our brethren of civil life, specialists in medicine, each and every one of you surgeons, to learn and to know that we too are specialists in medicine. Your special work is surgery; ours, that of giving sanitary advice and collecting the sick and the wounded of the march and of the battle, to provide food, clothing, medical attention, and transportation for these from the front to the hospital, often miles to the rear. We must train the personnel with which this is to be accomplished. The use that the medical officer has for a knowledge of medicine on the battlefield is to enable him to rapidly and correctly select the salvage which will best enable him to assist the officer in command to win the fight and the campaign. To do this he must save all that is possible for him to save from the wreckage of the battle's destruction. In removing these injured he must so handle the transportation that it will in no way interfere with the steady flow of troops and ammunition to the front. The army medical officer's training is all to this end. True, he must keep as nearly abreast with the progress of his medicine as it is possible for him to do, but his special work is to so advise the commander that the troops will be kept in the best possible physical condition, and to prevent injury to the morale by seeing that the firing line is kept as free as it may be of wounded and helpless men, by removing these wounded men as soon as it can possibly be done to a point where medical and surgical attention can be given properly. That this may be done and well done requires that those who are to do the work must be well trained as medical men and then trained as soldiers in this special function. Imagine yourself called upon to act as the chief surgeon of a division of infantry which had been in action and lost 10%. killed and wounded. This would mean

*Written for presentation to The Society of Clinical Surgery. Printed from the Boston Medical and Surgical Journal.

for you that you would have to collect and remove from the front within a few hours some 1800 wounded men. In doing this you would have to take command of and control 99 medical officers, 889 enlisted men, using 144 riding horses, 368 draft mules, and 16 pack mules, with 48 ambulances and nearly 50 wagons. This would involve the control and direction of nearly 3000 men, two-thirds of whom were injured and being cared for by the other third. This, as you will readily see, is a soldier's work, and requires a soldier's training. Imagine yourself, fresh from civilian life, suddenly commissioned as the chief surgeon of a division of infantry, a unit of this character committed to your care, and you told to prepare it for battle, the commander in a few brief words telling you of his intention and desire. Imagine yourself studying a map trying to visualize an unknown country, undertaking to form a judgment of the most suitable places for your ambulances and hospitals under the instructions you had received. It would be puzzling to get this command of nearly 1000 men out of their camp and on the road, to give each ambulance company its order for the place it was to reach at a definite hour, to each field hospital where it would probably be best protected from the fire of the enemy and the hour you wanted it in position; to give the order in just what direction and to what point you expected to have the wounded evacuated. It is these things, so briefly outlined here, that make the army medical officer a special class of soldier. It was the lack of medico-military preparedness which caused the great scandal in the Crimean War, and the scandal of the war between the states which resulted in the establishment of the United States Sanitary Commission in 1861 to assist the Army Medical Department. It was this lack which caused men to lie wounded on the field of battle for days after the fights of 1861-62, and to die of exposure and lack of food within sixty miles of the City of Washington. It was this same lack of medico-military training which caused the great scandal of 1898, and that of the South African War in 1899. If we can only get the fact that the army medical officer must be a special class of soldier, if he is to render good service, firmly fixed in your minds, you will be in position to be of service, for you will then know that what we need is not a man with a knowledge of medicine, but a medical man who has been trained in the special work of a medical soldier. Any medical man can become a surgeon with proper training. Any medical man can be trained as an army medical officer.

Gentlemen, unless the medical officer who is to see to the collection, tranportation, feeding and medical care of the thousands of wounded of a modern war, is trained in the soldier's part of a medical officer's work and well trained, it will spell disaster. No man can handle this work who does not know it, and who has not in the best sense become a specialist in this work. For one of you gentlemen, untrained in this particular specialty of medicine, to undertake this work, is to invite misfortune into your life. Our war history is full of just such disasters. When you shall have learned this and shall have become convinced of its truth, you will then be in a position to know and understand the places where you can be of value to the army of the United States, and there are many places in which you can be of the highest value. You can be of great assistance in caring for the sick in the large hospitals of the rear; this is the accustomed work of your every-day life, in which no outside man can teach you anything. You can help the Army Medical Department to select young men for service in the Army Medical Department; you can push the National Board of Medical Examiners to the full fruition of its desire, and thus eliminate from the ranks of the profession the incompetent. The young

men are the men who would come to assist us in the problems of administration and transportation, for in time of war the army medical man's function changes more than that of any other officer in the service, for he who has trained himself along the lines of giving bedside care to the sick or wounded, now suddenly finds himself confronted with the problems of giving sanitary advice to large bodies of troops, of collecting and transporting the wounded and sick to the hospitals, often miles to the rear. We are expected to prevent the ingress of disease, and to handle the sick and the injured without friction. The younger men should be encouraged in every possible way to go to the camps of instruction now being held in many parts of the United States. Many of you older of the brethren have gone to these camps held for the Medical Reserve Corps officers. Encourage the younger men to go, to study, not military surgery, but the medical service of armies. This is far from being a study of surgery, of medicine, or sanitation, yet involves a knowledge more or less complete of each of them. It consists in applying the knowledge of these matters to the military problem at hand.

You can be of great service to the Army by inviting the attention of the young medical man whom you have trained to the advantages offered to the medical student by a career in the Army Medical Corps. Might not a law be secured which would enable you to recommend to the War Department those medical men of the smaller districts whom you knew to be licentiates of the National Board of Medical Examiners, whom you knew to be competent diagnosticians, men you felt to be well qualified to select recruits for the Army under rules laid down for them by the War Department? Would not such a group of men be of service both in war and peace? In past wars the work of the army medical man has been done under conditions of stress and strain which would not be believed by one who has had no part in it. You have done the work, you have stood the strain, you have suffered the pain. Many of you know the whole story. **Would it not be better to be trained?** Would not this contact between yourself and the Army medical officers be in itself an assistance to them? Would they not feel the encouraging hand of your brotherly interest? Would they not be better for reaching out for your assisting hand? For it is to you, the leaders and teachers of the oncoming generation of medical men, to you, the High Priests at the Altar, in the spotless robes of high purpose and earnest endeavor, to you who keep the fires burning, to whom we must turn for those who are to follow us, to attain to even higher, better things than Lavaran, Ross, and our own Reed and Gorgas.

CONFERENCE OF DEANS OF DENTAL COLLEGES.

Washington, D. C., July 18, 1917.

Dr. Wm. H. G. Logan, Chairman of the Dental Committee of the General Medical Board, Council of National Defense, issued a call for a meeting of the Deans of the Dental Colleges for 11:00 A. M., Wednesday, July 18th, 1917, in the office of the Council of National Defense, Munsey Building, Washington, D. C.

This conference of the Deans met in Willard Hotel and was called to order by Dr. Logan. Dr. Logan stated that he had invited to this meeting representatives of the War Department, and of the General Medical Board, Council

of National Defense and Guests. The Chairman announced that he had invited these men into this conference, in order that they might as officials of the Government and as representatives of the General Medical Board, Council of National Defense, give an official report, relative to the serious situation confronting the medical and dental students, as well as members of the faculty in medical and dental colleges of conscription age under the Conscription Act. A complete report of these addresses will be found on pages 926-935 in this issue.

The Chairman, after these addresses had been given, called Dr. Herbert L. Wheeler, New York City, Vice-President of the National Faculties Association, to the chair. Dr. Charles Channing Allen, Kansas City, Missouri, the Secretary of the Faculties Association, acted as Secretary of this conference.—Editor.

OFFICIAL REPORT OF FIRST AND SECOND SESSION OF DEANS.

The first conference of the Deans of Dental Colleges was called to order at 1 o'clock P. M. at Willard Hotel, Washington, D. C., July 18, 1917.

The following schools were represented: Thomas W. Evans Dental Institute University of Pennsylvania, Dental Department, Chas. R. Turner; University of Michigan, Dental Department, Marcus L. Ward; Georgetown University, Dental Department, S. W. Bowles; University of Buffalo, Dental Department, Daniel H. Squire, Dean; Medical College of Virginia, Dental Department, J. A. C. Hoggan; Temple University, Philadelphia Dental College, I. N. Broomell; Washington University, Dental Department, J. H. Kennerly, Dean; St. Louis University, Dental Department, J. P. Harper, Dean; Atlanta Southern Dental College, Thos. P. Hinman, Dean; University of Maryland, Dental Department, T. O. Heatwole, Dean; University of Tennessee, Dental Department, D. M. Cattell; Chicago College of Dental Surgery, Truman W. Brophy, Dean; Northwestern University, Dental Department, Arthur D. Black; University of Illinois, Dental Department, Arthur D. Black, Rep.; Vanderbilt University, Dental Department, Henry W. Morgan; University of Pittsburgh, Dental Department, H. E. Freisell; Marquette University, Dental Department, H. E. Friesell, Rep.; University of Iowa, Dental Department, F. T. Breene, Dean; University of Minnesota, Dental Department. Thos. B. Hartzell; Louisville College of Dentistry, W. E. Grant, Dean; Loyola University, Dental Department, C. V. Vignes, Dean; Tulane University, Dental Department, Wallace Wood, Jr., Dean; Baltimore College of Dental Surgery, B. Holly Smith, President; Indiana Dental College, F. R. Henshaw, Dean; Tufts College Dental School, William Rice; Ohio University, Dental Department, H. M. Semans; Western Reserve University, Dental Department, F. M. Casto; New York College of Dentistry, Alfred R. Starr; Col. of Dental and Oral Surgery, Wm. Carr; Geo. Washington University, Dental Department, J. Roland Walton, Dean; Ohio College of Dental Surgery, Henry T. Smith, Dean; Western Dental College, Edward B. Rhinehart, Dean; Kansas City Dental College, Charles Channing Allen, Dean.

The following gentlemen were appointed a committee to select a committee of five to interview Secretary Baker in an effort to secure exemption for undergraduates and teachers of military age in Medical and Dental schools.

Committee: Drs. Black, Friesell, Turner, Grant, Hartzell, Casto, Allen, Carr, Brophy, B. H. Smith, Price, Bowles, Semans and Barber.

The conference was addressed by Dr. Franklin Martin, Col. Robt. E. Noble, Major Victor Vaughn, Col. Owen, Col. Goodwin, of the English Army, Col. C. Dercle, of the French Army, and others upon the subject of the Dental and Medical Profession

as relating to the War. Conference was also addressed by Dr. Homer Brown, Chairman of Legislative Committee of National Dental Association, urging the Deans to use their influence with their respective Congressmen and Senators in behalf of the Lodge Amendment to House Resolution No. 4897.

The following resolution was reported and adopted: **That those students who, by affidavit of the proper official of a standard Medical or Dental school, are shown to have been in attendance as underclassed men and to have made records meeting the requirement of the representative schools for promotion, and who may be drafted, be referred to the Surgeon General of the Army or Navy for disposition.** Carried.

The Committee selected to interview Secretary of War Baker was Drs. A. D. Black, H. W. Morgan, H. E. Friesell, W. H. G. Logan and F. M. Casto.

It was resolved that the Dean of each College secure from their students the numbers of those drafted and report the same to W. H. G. Logan, care Surgeon General of United States Army, Washington, D. C.

The committee to interview Secretary of War Baker was instructed to wire the various Deans of the Dental Colleges (Collect) the result of their conference.

A committee was appointed, of which Dr. Truman W. Brophy, Chicago, was appointed chairman to draft resolutions complimentary to the Dental career of Dr. E. C. Kirk, and to express regret at his retirement from the profession. This committee will report in time for the next issue of The Journal.

Adjourned.

HERBERT L. WHEELER, Chairman.
CHARLES CHANNING ALLEN, Sec.

ANTITOXIN FOR GAS GANGRENE.

The gas-producing bacilli, now commonly spoken of as B. welchii occur in a variety of lesions, but their chief hold on our interest lies in their connection with gas gangrene, that dreadful complication of wounds, especially those received in modern warfare. The effects of gas bacilli have been explained in various ways, most often as due to some form of intoxication, either from the products of the decomposition of infected tissues or thru the generation of fatty acids as well as in other ways, but it has not been thought that the effects were dependent on true bacterial toxins. Bull and Pritchett, however, report highly interesting experiments, the results of which indicate that, under suitable conditions, cultures of gas bacilli produce true toxins to which their pathogenic effects, at least in certain animals, may be ascribed. There are produced at least two distinct toxins, one of which is hemolytic while the other causes local edema and necrosis and probably also a more general toxic action.

The destructive action on blood was shown most definitely by the intravenous injection of Berkfield filtrates of cultures of gas bacilli in plain broth, to which sterile pigeon or rabbit muscle had been added; and the local destructive effects were produced best by subcutaneous and intramuscular injections of such filtrates. Indeed, the lesions in the breast muscles of the pigeon, produced by injection of the filtrates, resembled closely the effects caused in animals and in human beings by actual infection with the bacilli. These vacations of filtrates of gas bacilli cannot be neutralized with sodium hydroxid, and hence are not caused by butyric and other acids; they are materially reduced by heating fil-

trate to 62 C., and are completely removed at 70 C. for thirty minutes. Repeated injections of filtrates in pigeons and rabbits result in a true active immunity, and the blood of immunized rabbits neutralizes the toxic actions of the filtrate not only in the test tube, so far as the hemolytic action is concerned, but also in the living animal with respect to the locally injurious actions as well as the destruction of blood corpuscles, and it is still more significant that in pigeons such antitoxic serum proved to be protective and curative against actual infection with gas bacilli, both in the spore and in the vegetative stages. Bull and Pritchett also find that antitoxic rabbit blood and toxic filtrates of gas bacilli neutralize each other perfectly in multiples of single doses, thus fulfilling the law of multiple proportions as established with reference to the toxins and antitoxin of B. diptheriae and B. tetani.

It appears, then, that gas bacilli may produce true toxins, which cause the principal pathogenic effects seen in gas infections and which can be neutralized by antitoxin, the latter being also protective and curative against gas bacillus infection in pigeons—a discovery that would seem to hold out great promise for the development of a specific treatment of human infection with gas bacilli.—*The Journal of the American Medical Association.*

NECESSARY FIELD EQUIPMENT FOR DENTAL RESERVE CORPS OFFICERS.

1. Upon receiving your commission as first lieutenants in the Dental Reserve Corps, you should at once provide yourself at your own expense with the following articles, so as to be in readiness to obey orders, as it is contemplated that you will shortly be ordered to active military duty. The following is the minimum that you should have at once. They can be purchased from the quartermaster's department at the nearest post, or you can get them from a military equipment house.

1 hat, service.
2 breeches, service (olive drab).
1 coat, service (olive drab).
2 shirts, woolen (olive drab).
2 pairs shoes, russet (Army type, broad toes).
1 slicker, saddle (to be used as a raincoat).
2 blankets, Army.
1 mosquito bar.
1 cot, (Army).
1 bedding roll.
1 waist belt.
1 tag, identification.
5 pair shoe laces, extra.
1 sleeping pad (or 2 comforters, light).
1 or 2 standard quartermaster trunk lockers.

If winter, one overcoat purchased, buttons changed and insignia of rank placed on sleeve.

You may use your own underclothing, socks, handkerchiefs and toilet articles.

Additional articles to the above list can be purchased later.

2. The following must be purchased from private dealers in military uniforms and equipment:

1 hat cord, officer.

Collar insignia and insignia of rank (4 letters "U. S. R." bronze, for coat. 4 caduceus with "D. C." superimposed on the caduceus. 4 first Lieutenant Bars).

1 canvas basin.
1 canvas bucket.
1 collapsible candle lantern.
1 folding camp chair.

3. The following mess equipment must be secured from the ordnance offi-

cer at the nearest military post, or by sending a certified check, after ascertaining the cost, to the Commanding Officer, Rock Island Arsenal, Rock Island, Illinois. (Private dealers also sell them).

1 canteen and canteen cover, mounted.

1 cup, 1 knife, 1 fork, 1 spoon.

1 can, bacon; 1 can, condiment; 1 can, meat.

1 pouch with first aid package, with cover.

4. If you wear eye-glasses take along an extra pair or two. Have at least one of them, spectacles with strong frames.

5. The tentage and its accessories you will need can be drawn from the quartermaster's department on memorandum receipt, at your first station.

6. When the Government calls you out, it needs your services at once. Promptly obey your order to report for duty on its receipt. Only the War Department can authorize delay.

Upon receipt of orders placing you on active duty, until such time as you may be relieved from same, you will wear the uniform on all occasions. Take no civilian clothes with you, as you will not be allowed to wear them.

7. Buy your own ticket from your home to your station. You will later be reimbursed at the rate of 7 cents per mile if traveling without troops.

8. **Ship your bedding roll with your baggage on your ticket, as it will be impossible to provide you with bedding when you report for duty at a post.**

9. If going with expeditionary forces to Europe, each first lieutenant can take 350 lbs. baggage at Government expense. This allowance shall include equipment C (as noted above) professional books, and all necessary clothing and bedding for extended field service. These must be packed in the standard quartermaster trunk lockers, and bedding rolls or their equipment in similar containers.

10. On arrival at your station, report yourself in uniform to the Commanding Officer for duty, and as soon thereafter as possible, report to the Surgeon, who is your immediate commanding officer. The Commanding Officer or his assistant will see that you are provided with quarters and inform you how to arrange for mass facilities.

11. The Government provides you with fuel and light, gratis.

12. After you arrive at your post, start systematically at once to familiarize yourself with contents of "Army Regulations," "Manual of the Medical Department," as pertains to you, as an officer of the Dental Corps, and with the necessary paper work and reports. The only way to learn Army paper work is to do it, thus acquiring a practical working-knowledge of the subject. For further information secure the advice of any medical or dental officer of the Army in your vicinity.

13. If ordered to accompany expeditionary forces to Europe, you must not divulge either orally, by letter, or telegram, to anyone the time or place of embarkation.

REGISTER OF DENTAL PATIENTS AND REPORT OF DENTAL WORK.

(Extract from the Manual of the M. D.)

465. A register of dental patients will be kept on cards, Form 79, at every post or station attended by a member of the Dental Corps.

466. The case of every officer and enlisted man of the Army who is treated by the dentist will be entered in the register, a separate card being made for each period of continuous treatment. Upon the conclusion of continuous treatment

in any case its card will be closed by appropriate entry in the "Results" column.

(a) Should it become necessary to discontinue work on a case on account of the dentist's departure from the station the case will be closed on the card, making a record of the status of the work in the "Results" column.

(b) If an officer or soldier previously on the register, i. e., for whom a closed dental card is on file, should begin a new course of treatment, whether for the dental disabilities formerly treated or otherwise, a new card will be made for the new course of treatment.

467. The dental cards in the several cases will be made day by day as the treatments begin. They will be kept in two files, each arranged in dictionary order according to the surnames of the patients—the current file and the permanent file. The current file will consist of the cards of all uncompleted cases and the completed cards in current use for the preparation of the next report of dental work. Cards will be transferred from the current file to the permanent file immediately following their completion and the preparation of the ensuing report of dental work.

468. The cards will be legibly written in indelible black ink, by pen or typewriter, as may be most convenient. The entries will not be crowded. Extended entries, when necessary, may be made in the manner indicated in paragraph 434a. See page 4.

469. The dentist will sign or initial all cards covering treatments given or concluded by him. Alterations will be authenticated by him by his initials.

470. The nomenclature given on page 2 of the monthly report of dental work (Form 57) will be employed so far as applicable in recording dental and oral diseases and injuries.

471. To effect economy of space and insure uniformity of records, abbreviated entries are prescribed as indicated in the following tables:

CARD FOR THE REGISTER OF DENTAL PATIENTS (Form 79.)

REGISTER OF DENTAL PATIENTS AT .....

(1) Surname	(2) Christian Name	(3) Rank	(4) Company	(5) Regiment or Staff Corps	(6) Age, Yrs.	(7) Race	(8) Nativity	(9) Service, Yrs.	(10) Disease or Injury, with Location, Complications, Sequelae, Etc.	(11) Dates and Nature of Treatments and Operations	(12) Results and Remarks.

Dental Surgeon, U. S. A.

CLASSIFICATION OF THE TEETH.

1. Superior central incisors.
2. Superior lateral incisors.
3. Superior cuspids.
4. Superior first bicuspids.
5. Superior second bicuspids.
6. Superior first molars.
7. Superior second molars.
8. Superior third molars.
9. Inferior central incisors.
10. Inferior lateral incisors.
11. Inferior cuspids.
12. Inferior first bicuspids.
13. Inferior second bicuspids.
14. Inferior first molars.
15. Inferior second molars.
16. Inferior third molars.

Note.—In designating the teeth, and in recording all operations upon them, the dental surgeon will indicate the tooth by the above plan, using the letters R and L to designate the right and left sides and the figures 1, 2, 3, etc., to designate the teeth.

Examples.—R1, right superior central incisor; L14, left inferior first molar.

CLASSIFICATION OF CAVITIES.

Simple Cavities of Exposed Surfaces.

Incisors and cuspids:

A. Labial.
B. Lingual.
C. Incisal.

Bicuspids and molars:

D. Occlusal.
E. Buccal.
F. Lingual.

SIMPLE APPROXIMATE CAVITIES.

Incisors and cuspids:

G. Mesial.
H. Distal.

Bicuspids and molars:

I. Mesial.
J. Distal.

COMPOUND CAVITIES.

Incisors and cuspids:

K. Mesio-labial.
L. Disto-labial.
M. Mesio-lingual.
N. Disto-lingual.
O. Mesio-incisal.
P. Disto-incisal.
Q. Mesio-disto-incisal.

Bicuspids and molars:

R. Mesio-occlusal.
S. Disto-occlusal.
T. Occluso-buccal.
U. Occluso-lingual.
V. Mesio-disto-occlusal.
W. Bucco-linguo-occlusal.

Note.—In recording all operations of filling the teeth, the cavity will be described by the dental surgeon according to preceding classification, using the letters A. B. C. etc., to designate its location.

Examples.—A, simple cavity in labial surface of an incisor or cuspid tooth; I, simple cavity in mesial surface of a bicuspid or a molar; V, compound in mesial, distal, and occlusal surfaces of a bicuspid or a molar.

CLASSIFICATION OF FILLING MATERIALS.

Tin.
Amalgam.
Oxyphosphate.
Gutta-percha.

Note.—The kind of filling material employed will be indicated by using the first letter of the word designating that material.

Example.—R5, V, A: Tooth, right superior second bicuspid; cavity, mesio-disto-occlusal surfaces; filling material, amalgam.

If a combination filling is employed, it will be designated by the first letters of the words designating the materials used.

Example.—L7, S, G-O: Tooth, left superior second molar; cavity, disto-occlusal surfaces; filling material, gutta-percha and oxyphosphate cement.

OTHER OPERATIONS AND ABBREVIATIONS.

In recording operations made with gold the full word gold should be written out.

Other operations upon the teeth will

be designated by a combination of letters, as follows:

Abscess lanced: A-L.
Calculus removed: C-R.
Gums lanced: G-L.
Pulp capped: P-C.
Pulp devitalized: P-D.
Pulp extirpated: P-E.
Root canal filled: R-F.
Tooth extracted: T-E.
Tooth treated: T-T.
Further treatment: F-T.

472. Details of cases will be carded as follows:

(a) Spaces 1 to 9 will be filled out in the manner prescribed for the register of patients (pars. 437 to 442). See page 4.

(b) In space 10 the diagnosis will be recorded. One line should be taken for each morbid condition requiring treatment which is found when the case is first entered or which subsequently develops during the course of the treatment.

(c) The date, nature, and result (as, e. g., cured, improved, unimproved, successful, unsuccessful, or undetermined) of the treatment of each such condition will be entered in spaces 11 and 12, with such additional remarks in the latter space as may be appropriate.

473. A report of dental work is required monthly of Form 57 from every military post or command at or with which a member of the Dental Corps has been on duty during the month. It will be made and signed by the dentist. If no patients have been treated during the month, the report, with a statement to that effect under "General remarks," will nevertheless be rendered.

(a) The report will be forwarded, thru medical channels, to the Surgeon General, before the fifth day of the next succeeding month.

434. (a) Entries must not be crowded. When the space provided on the front of the card under any heading is not sufficient to complete an entry thereunder, the record thereof will be continued on the back of the card, or, if still more space is required upon an extension slip. The extension slip must be of the same size as the card, and be pasted to the lower margin of the back of the card, using about one-half an inch for the seam; this will place the seam at the top of the card when the latter is filled. When an entry is continued its two parts should be connected by cross references, using a small letter in parenthesis, thus, (a), so that the record can be readily followed.

437. Name.—Name should be correctly and legibly written. Initial letters or abbreviations may be used for middle names only.

438. Rank, company, and regiment or staff corps.—The usual abbreviations may be employed.

(a) Changes in the patient's rank, company, and regiment or corps while his case is current on the register will be recorded in this space, giving dates of changes.

(b) If the patients are discharged soldiers, applicants for enlistment, or members of the Organized Militia, those facts, respectively, will be set forth on their cards under this heading, giving in the case of former soldiers the organization to which they last belonged, and in the case of militiamen their militia organization. Other civilians should be designated simply as civilans.

439. Age, years.—The age at birthday nearest to date admitted is required.

440. Race.—"Use "W," "C," "F," "P. R." "I," meaning "white," "colored," "Filipino," "Porto Rican," or "Indian."

441. Native.—Place of birth; give State, if a native; country, if foreign. Usual abbreviations.

442. Service, years.—Give length of service to date of admission, in years and fractions thereof, whether continuous or not.

DUTIES OF MEDICAL CORPS.—LEGISLATION.

Senator Owen has introduced a bill (S. 2529) defining the duties of the medical department of the Army. It provides as follows:

That the duties of the medical department of the United States Army shall be as follows:

First. The initiation and the direction of measures for the prevention of disease among the troops of the Army and avoidance of sanitary errors in the location, construction, and management of posts and camps.

Second. The sanitary, medical, and surgical care of the officers and soldiers of the Army of the United States. The physical examination of all officers and soldiers entering or leaving the Army of the United States.

Third. The care of and accountability for all transportation pertaining to the movements of men and materials of the medical department and of the sick and injured of the Army.

Fourth. The preparation and preservation of the records of the transactions taking place under the three preceding paragraphs.

Fifth. It shall be the duty of the senior medical officer of an army, corps, division, brigade, territorial division or department in which an outbreak of disease shall have occurred to at once investigate and determine the reasons therefor. Should this investigation demonstrate any inattention to duty on the part of the medical officer or of the commanding officer in charge, it shall become his duty to at once prefer charges against the offending officer, and the duty of the senior commander next in rank to bring the charges to preferred immediately before a courtmartial for trial, subject to such punishment as the court may direct.

Sixth. The Secretary of War is hereby directed to have prepared suitable regulations for the enforcement of this act.

Seventh. The medical department shall also perform such other duties in relation to this service as the President may direct.

ARMY DENTAL LEGISLATION.

Senator Lodge has proposed an amendment to section 10 of the national defense act by inserting the following:

Hereafter the dental corps shall consist of commissioned officers of the same grades and proportionally distributed among such grades as are now or may hereafter be provided by law for the medical corps, who shall have the rank, pay, and allowances of the officers of corresponding grades in the medical corps, including the right to retirement as in the case of other officers, and there shall be one dental officer for every one thousand of the total strength of the Regular Army, authorized from time to time by law: Provided, That all laws relating to the examination of officers of the medical corps for promotion shall be applicable to officers of the dental corps: Provided further, That dental examining and review boards shall consist of one officer of the medical corps and two officers of the dental corps: And provided further, That immediately following the approval of this act all dental surgeons then in active service shall be recommissioned in the dental corps in the grades herein authorized in the order of their seniority and without loss of relative rank in the Army: And provided further, That first lieutenants in the medical department shall be promoted to the grade of captain upon the completion of three years' service in that grade in the medical department and upon passing the examinations prescribed by the President for promotion.

POSTAL RULES IN FRANCE.

Postmaster General Burleson has issued the following:

In accordance with Order No. 413, establishing a United States mail agency in France, postmasters are informed that money orders may be issued at domestic rates payable at such agency. Payment will be made promptly at headquarters of the agency or at the branch assigned to the military unit to which the payee belongs.

In drawing orders the office of payment should be designated as "U. S. Army Postal Service," and in the coupon the name of the payee should be followed on the next line by the regiment and company, or other organization to which the payee belongs. Money orders will be issued by the agency under office No. X-9000, and the name of the office as "U. S. Army Postal Service," followed by the number which designates headquarters of the branch, for example, the name of the issuing office of an order drawn at headquarters will appear at the top of both order and coupon, and in the impression of the money order branch stamp as "U. S. Army Postal Service No. 1."

The postmarking stamp of mail matter forwarded from the agency will bear a similar designation.

There is no provision at present for parcel-post service, and postmasters should refuse to accept for registration letters containing money or other valuables. Important papers which can be duplicated may be accepted for registration, but patrons should be informed that indemnity will not be paid for lost registered mail. The public should be warned that it is not safe to inclose currency in letters under any circumstances and that money orders should be used for transmitting money to members of the expeditionary forces.

MEDICAL AND DENTAL STUDENTS AND CONSCRIPTION.

The following are typical of numerous inquiries which have been received from medical students regarding exemption from the draft.

"I am a student in the University of Illinois Medical School. I read in your journal that it was the duty of the medical students to continue in school. I wrote the War Department in regard to whether medical students would be drafted. I received very little satisfaction, and I believe that medical students will not be exempt."

"Would you be so kind as to write me, if possible, the status of medical students under this Conscription Law; whether they will be allowed to continue in school or whether they will be drafted?"

These two letters are simply samples. We regret to say that no action has thus far been taken by the government in regard to pre-medical students, medical students or physicians. The probability is, however, that the secretary of war will recognize the needs of the Medical Department and grant the requests that have been made to him that medical students, if not premedical students, be exempted from year to year; in other words, allowed to proceed with their studies.—*The Journal of the American Medical Association.*

NO WOMEN IN FRANCE.

The War Department is besieged with requests from the wives and other female members of families or Army officers for the privilege of accompanying the American military expedition to France. The inexorable rule has been established and will be impartially enforced against the presence of American women with the Army abroad. It is held by the military authorities that France, under existing conditions, is no place for woman kind. No exceptions will be, or can be, made; for it is realized that such a privilege granted in one case will serve to let down the bars generally, with the result of much trouble and the assumption of grave responsibility for individual safety during the trip and while abroad for which the War Department entertains no liking at this stage in the proceedings. The one chance for women to go to France just now is in the capacity of nurses for the Red Cross. But even in those cases the War Department looks with disfavor upon the presence in France of women from this country. Another rule which has been adopted is that there shall not be with the American forces any individual who is not in uniform.—*Army and Navy Register.*

POSITION OF PHYSICIANS AND DENTISTS UNDER THE SELECTIVE CONSCRIPTION.

A physician inquires: "As I am just within the upper conscription age limit I would like to know whether, if I did not apply for commission in the Reserve Corps, and if I should be selected by the draft, I could then make application for the Reserve Corps. I ask this because I have been hearing that medical men in the conscription limits who do not join the reserve will, on being drafted, be put in as hospital orderlies and given no chance of joining the reserve."

Answer: It has not yet been determined what will be the position of the physician who is drafted. No doubt, however, the War Department will avail itself of any special knowledge which the conscripted man may possess. We know of no reason why a physician who is drafted may not ask to be transferred to the Medical Corps.—*The Journal of the American Medical Association.*

PHYSICAL QUALIFICATIONS FOR MEDICAL OFFICERS.

A Pennsylvania physician writes: "I have been hearing from many sources of the severity of physicial examination of men applying for commission in the Medical Reserve Corps, and I would like very much to know whether a condition that I have at present, i. e., deviated nasal septum and hypertrophied turbinates, would be considered as cause for rejection."

Answer: According to G. O. No. 66, W. D., 1910, "Rules for the Examination of Recruits":

"Nasal obstruction due to septal deviation, hypertrophic rhinitis, or other cause, if irremediable and sufficient to produce mouth breathing, is cause for rejection. Nasal polypi, when operable and not associated with sinus disease, are not disqualifying."—*The Journal of the American Medical Association.*

NEW OFFICE FOR COL. JEFFERSON KEAN.

Col. Jefferson R. Kean has been recalled from service in the Red Cross and is to be placed in charge of the 160 United States Ambulance sections in France. He will be succeeded in his position as director-general of military relief by Mr. John D. Ryan, president of the Anaconda Copper Company. Mr. Henry P. Davison, chairman of the Red Cross war council, says: "It is due to Colonel Kean's magnificent work in organizing base hospital units in this country that the Red Cross organization was the first to carry the American flag to France after our entrance into the war. Colonel Kean is peculiarly qualified for the great work he is to do abroad." Mr. Ryan will take over the supervision of the base hospitals, remaining in this country. He will also have charge of all Red Cross efforts to supply medical needs, including the Red Cross service in connection with the sixteen army cantonments. Before war was declared twenty-six base hospital units had been formed, and the number has since been increased to forty-three, with five navy base hospitals, eighteen hospital units and fifty ambulance companies. According to Mr. Davison, "thru the Red Cross and private donations these base hospitals have purchased equipment, including beds, blankets operating tables, tents, etc., at an expense of at least $2,400,000."—*The Journal of the American Medical Association.*

GIVING THE MEDICAL OFFICER THE RANK TO WHICH HE IS ENTITLED.

On July 20, Senator Owen introduced an amendment to Senate Bill 1786, which is of considerable importance at the present time. It is as follows:

On page 7, line 20, insert the following at the end of section 10:

"Provided, That hereafter the commissioned officers of the Medical Corps of the Regular Army shall be distributed in the several grades as follows:

		Per Cent.
Major generals		.25
Brigadier Generals		.25
Colonels		4.00
Lieutenant Colonels		8.00
Majors	23.5	
Captains	32.0	
Lieutenants	32.0	87.5
		100.00

"Provided, That when called into service the numbers of the officers of the Medical Reserve Corps shall be seven to the thousand of men in the National Guard and National Army and the relative grades of the officers of the Medical Reserve Corps shall be the same as the grades of the Regular Army.

"The President shall have authority to appoint officers of either corps as 'consultants,' with the duty of acting in an advisory capacity, making inspections and reports on medical, surgical, or sanitary questions, and such other duties as may be required by the chief of the Medical Department."—*The Journal of the A. M. A.*

MEDICAL STUDENTS AND THE DRAFT.

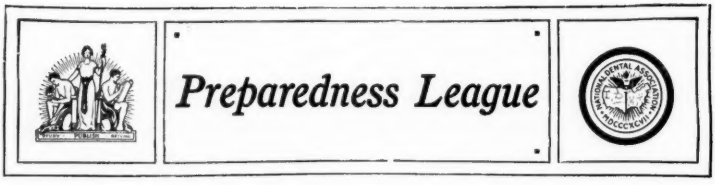
Surgeon-General Gorgas authorizes the statement that medical students will not be exempted from the draft, but they will be given conditional and limited furloughs to continue their medical studies. —*The Journal of the American Medical Association.*

CONSCRIPTED MEDICAL STUDENTS.

We regret to say that up to this time no definite arrangement has been made regarding the disposal of medical students who may be drafted and ordered into active service. There is no doubt, however, that a ruling will be made whereby they will be enabled to complete their medical education. It is important, in presenting the matter to the government for action, that definite information shall be at hand as the actual number of medical students who are included in the first call, as well as the total number of medical students registered under the selective conscription act. It is requested, therefore, that every undergraduate medical student who is subject to conscription, now or in the future, send in his name, the name of the medical college he attended during 1916-1917, the class in which he was enrolled, his age, etc., including his serial and numerical order of his draft. This information should be sent to the Council of Medical Education of the American Medical Association, 535 North Dearborn Street, Chicago, AT ONCE. A direct appeal by mail is being made to each student, in the hope that a complete list may be obtained promptly, and be available for use when the time comes. As this paragraph will not come to the attention of all medical students, physicians are asked to cooperate by bringing the matter to the attention of medical students with whom they may be in contact. IMMEDIATE ACTION IS IMPERATIVE.— *Editorial in The Journal of the American Medical Association.*

IDENTIFICATION TAG FOR PERSONNEL OF THE NAVY.

Officers and enlisted men in the United State Navy will hereafter wear a metal identification tag which will give the wearers name and date of his birth and enlistment, and in the case of an officer, his rank and date of his appointment, on one side, and on the reverse side, an etching of the finger-print of the right index finger. Officers of the Navy regard this as the best system of identification known. The tag will be worn suspended from the neck by a wire encased in the cotton sleeve.—*The Journal of the American Medical Association.*



THE ROCHESTER BRANCH OF THE PREPAREDNESS LEAGUE OF AMERICAN DENTISTS.

By Clint W. LaSalle, Inspector in Charge of the Military Infirmary.

In describing the birth, growth and administration of the Military Infirmary of Rochester Branch of the Preparedness League of American Dentists, the writer would emphasize the fact that from the start, this has been a cooperative affair undertaken in a spirit of splendid mutuality, with credit for the final result due each worker in equal measure.

When our local Chairman, Dr. C. G. Morsheimer, asked the writer to take over the direction of the League work in Rochester, cursory survey of the distribution of dentists thru the city; time to be lost in getting recruits to the dentists to whom assigned; the possibility of a man not yet sworn in failing to report after receiving League service; and the further fact that more than one dentist might be required per day to put the day's shipment of recruits in order to keep up to the requiremets of the three recruiting stations in Rochester; all these considerations convinced the writer that the original plan of one dentist caring for one recruit would not meet the demands of the present critical situation. Right there the Military Infirmary idea found birth.

For a light, airy room with north light, in the third floor of the building housing the Army and Navy recruiting stations, we are indebted to the public spirit of Mr. Noeth, the owner, who had the room and its approaches put in order for immediate occupation.

The chair, electric engine, cabinet, bracket and desk, a set of forceps and some other operative oddments are in our use thru the courtesy of the Rochester Dental Society, who had these impediments in storage following the closing of their original dispensary.

The Rochester R. R. and Light Co. piped for gas, furnished a gas plate, ran the service wiring gratis. The Pearce Electric Co., Inc., donated the interior wiring and fixtures.

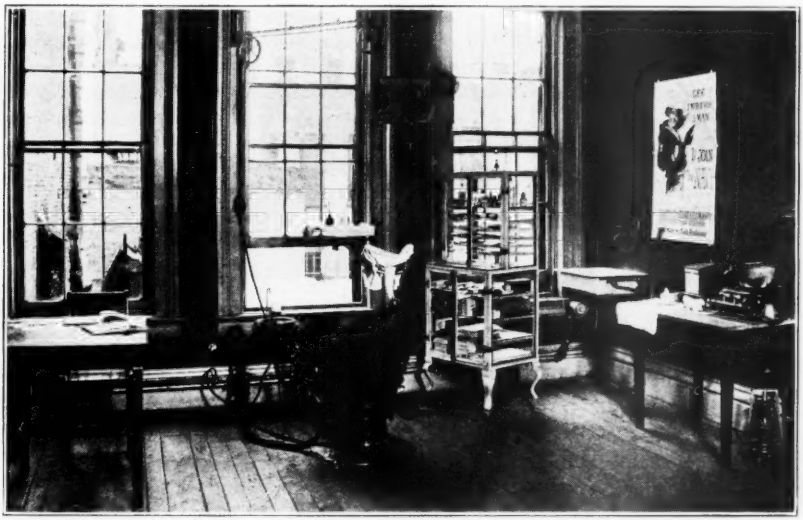
The Johnson and Lind Co., Primrose-Johnson Co., Davis Schultz, Husner-Piehler, Weller and Groh, and the Swift Co., all contributed freely and we were several times asked if we were sure that all our needs had been met. Local drug concerns contributed without question the necessary drugs, antiseptics and so on.

We had been told that we would find it impossible to secure gratis plumbing, traps and sink. T'was our easiest as-

signment. Thru the curiosity of Mr. Guilford Adams, of the Sloan Co., we received pipe and traps, the Hunting Co. supplied an enameled sink and nickel faucet and Mr. Howe of the Howe and Basset concern personally measured and got out the specifications for the job and supplied two men, who worked four days in installing a thoroly workmanlike job.

It may be of interest for the reader to learn that the constructive work of organization was accomplished in two and a half hours, thanks to organization, cooperation and the spirit of a mighty loyal committee.

Drs. Morsheimer—our local head—Bryant, Sec'y., and Gerald G. Burns met with the writer ten days before the opening of the Infirmary. Each member had his work to do, the same being laid out with an eye for social, fraternal or professional affiliations. Each man stuck to the work assigned till accomplished and at two in the afternoon of the same day the Committee met with practically all important arrangements complete. The Infirmary opened ten days later with Dr. Morsheimer at the chair. All was in order save the cuspidor attachments, but Dr. Morsheimer opened the window and instructed his patient to use the tin roof for a time. Two hours later all was complete and the Infirmary has been running several weeks without hitch or hindrance, to the satisfaction of all concerned.



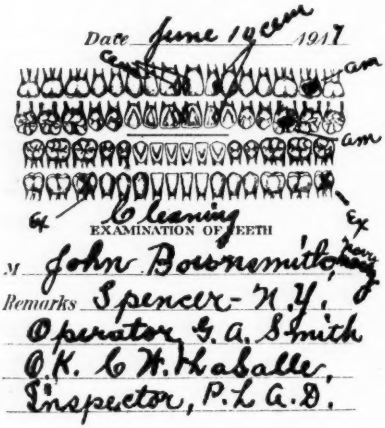
MILITARY INFIRMARY, ROCHESTER UNIT, PREPAREDNESS LEAGUE OF AMERICAN DENTISTS.

OPERATION OF THE INFIRMARY.

It should be understood that the various services have dental requirements that differ somewhat. Also that one may ship its recruits in the evening, another in the morning, and so on. These matters change occasionally, so it is arranged that the writer, as Inspector, be at the Infirmary every afternoon at one till one-thirty. At this time all recruits needing our attention are brought in by non-commissioned officers from the stations, mouths examined, the nature of the work needed explained by the Inspector to the Operator for the afternoon.

The Inspector leaves to return at five-fifteen to check up the afternoon's work, make other inspections if needed and close the Infirmary. Our charts, as

CHART.



shown, are made out in duplicate, by aid of carbon paper and the results tabulated by a simple method of record, as shown by the chart herewith and the chart record transcribed to the record book. In closing this brief description of our work, we would add the observation that the men who have worked in the Infirmary to date, appreciating the peculiar limitations of the work, have commenced to work out for themselves a technic of cavity preparation and manipulation of plastic filling materials that the writer expects to develop into dimensions of some importance before long, at which time something may be written thereon.

RECORD BOOK.

1917	Operator, G. A. Smith	Cln	Ext	Am	Cem
6-10	Jno. Brownsmit, Navy Spencer, N. Y.	1	2	2	3
....	.....	....	....	....	....
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....	.....	....	....	....	....
....	.....	....	....	....	....

Operations during the first two weeks numbered about one hundred and fifty—covering, cleaning, extracting, and amalgam and cement fillings.

PREPAREDNESS LEAGUE OF AMERICAN DENTISTS.

By J. W. Beach, Chairman, Buffalo, N. Y.

The Preparedness League of American Dentists has become the medium thru which the dental profession at large is carrying on the work or preparation for the great service that is ahead of it. For a year and a half this organization has been putting forth every effort to awaken our profession to the realization of the situation and had it not been for the unceasing labor of the organizers of the League surely we would have found ourselves in a deplorable state of unpreparedness when the stirring message that "War is upon us" was sounded from coast to coast.

The League has nearly 6000 active members and more than 125 Sectional Units in active operation. Study courses are planned for these Units and several lectures with slides are furnished free of charge. This has proven a most effective means of preparing hundreds of our members for the entrance examinations to the Officers Reserve Corps, Dental Section. We are gratified to report satisfactory progress in securing a splendid Den-

tal Reserve for our Government and we predict the establishment of the most efficient service in this important department of any nation.

Caring for the mouths of applicants for enlistment who are unable to pay for dental service is a most important object of the League and we wish to take this opportunity to thank our members for the unparalleled response this phase of our work has received. We are proud of our profession and when the final reckoning shall come, it will be shown that we have saved our country many thousands of fighters. The League has been designated the official medium for prosecuting this work and members are requested to report to our headquarters all cases thus cared for so that we may compile statistics to present to the Surgeon General. The Government appreciates what we are doing and we believe our efforts will not go unrewarded when future favorable legislation may be desired by us.

We hope to bring many new members into the National Dental Association thru the League and would call the attention of the Officers of our Units to this matter. We should bring many into the National before the annual meeting in October next.

The second annual meeting of the League will be held in conjunction with the National Dental Association on October 23rd, 1917, in Concert Hall, Hotel Astor, New York. We are planning a splendid program and will be able to report wonderful results from the different Units. Several dental ambulances for use in France are being supplied by our Units and other equally patriotic movements are under way.

We urge the formation of Units more generally in order to promote the various objects of the League. Organization is essential and we would point out that now is the time our best efforts are demanded as the League is organized as a war measure, therefore, we invite correspondence with this object in view. Headquarters are at 131 Allen St., Buffalo, N. Y.

OUR DENTAL MOTOR AMBULANCES.

By J. W. Beach, Chairman, Buffalo, N. Y.

The League is happy to announce to its members the remarkable success of its plans for supplying dental ambulances for service in France. The Surgeon General already has accepted three ambulances presented by the San Francisco and other Units of Northern California. The Southern California district of the League will soon follow with a like number. These are the first ambulances to be tendered the Government.

One of the most striking incidents of this movement recently occurred in New York City when Dr. Charles F. Ash received a magnificent donation from an appreciative patient of $10,000 for five dental ambulances for the League. This is a splendid testimonial of the esteem in which Dr. Ash is held by his patients and an equally alued recognition of the great benefit to suffering humanity which the dental ambulance supplies.

We will gladly give to the Cleveland Unit the credit of originating the dental ambulance idea in connection with the League. At the first meeting of the Committee on Dentistry on April 15th, an offer of an ambulance was made to the Government by the Cleveland and other Ohio Units. Funds have been raised and the construction is now under way.

Kansas City and several other Units

about the country are following the commendable example of Cleveland. Should the League find the demand sufficient, at least twenty-five ambulances could be secured.

Two styles of dental ambulances may be recommended. The first embodies a full equipment permanently mounted on a Ford chassis enclosed in a roomy body with sufficient light. The other style is portable and may be set up under a tent. Both kinds have about an equal number of advantages and disadvantages, therefore, we recommend the supply to be in like proportion.

The value of the dental ambulance in war is almost beyond computation, for it can be driven close to the trenches and render a service of untold value. Dr. John D. Millikin, of San Francisco, says: I suggested that four dentists and two mechanics, these latter to act as chauffeurs, with one ambulance, to make up one Dental Motor Ambulance Unit. Two dentists and one mechanic could work at Base Hospitals while two dentists and one mechanic visited the rest stations with the ambulance, thus furnishing relief for the poor fellows coming back to the rest stations from the trenches."

The League will gladly furnish specifications to those interested and will assist in every way possible to forward this splendid plan. No more valuable service can be rendered by our profession and we hope to see a well trained Dental Motor Ambulance Unit accompany each one to France. This will insure the fullest degree of usefulness and more clearly emphasize the magnanimous spirit of helpfulness which is actuating the whole dental profession today.

At the annual meeting of the League next October, both styles of ambulance will be shown, as well as everything of interest connected with our service with the Officers Reserve Corps. It is to be a "Preparedness Exhibit" and we believe it will prove one of the most interesting features of the meeting of the National Dental Association.

AN IMPERATIVE COMMISSION FOR EVERY DENTIST.

By J. W. Beach, Chairman, Buffalo, N. Y.

The Preparedness League of American Dentists is directed by Dr. W. H. G. Logan, Chairman of the Committee on Dentistry, General Medical Board, Council of National Defense, to present to the Committee at its first meeting in September, as complete a list as can be obtained of recruits and prospective recruits made dentally fit during August.

Such a list will impress our Government with the great importance of our special service and give tangible evidence of the splendid spirit of cooperation and of sacrifice so strikingly shown by our profession during the recent months.

Every dentist has just cause for pride in the fact that fully 25,000 applicants for enlistment in the Army, Navy and members of the National Guard have been dentally equipped to fight for our country, thru the gratuitous service of thousands of members of our great profession.

WE WILL DO OUR PART.

The **Present Emergency** demands our best efforts! Every man sworn to fight for our colors should have his mouth and teeth put in proper state for three years service under the conditions now existing in France. This demand for our service

is most urgent now, therefore, your duty is clearly defined.

The government could not organize an adequate Dental Corps, furnish equipment and materials in less than one year's time. This puts the obligation upon our shoulders and if, as individual dentists, we fail to do our whole duty, we become the abetting cause of untold suffering and consequent loss of strength to the great fighting forces of our nation.

YOU MAY WIN THE WAR.

By caring for a single mouth! Stranger things have happened in the world's history. We would, therefore, impress you with your individual importance at this critical time when our great service to humanity has established preeminence.

Dentistry is marching to its own under the triumphal banner of unselfish service to the great army of our young manhood going forth to fight for their country's honor.

WE ARE AT WAR.

Therefore, give some part of your vacation to this work. The greater the sacrifice, the greater the reward in the consciousness of duty well done. Do your "bit" and ask other dentists to do the same.

INSTRUCTIONS.

Communicate with Recruiting Officers, Officers of State or Local Societies, Officers of Sectional Units or members of the Preparedness League of American Dentists, who will send to you those in need of treatment and unable to pay for dental service.

Report blanks will be furnished upon application to the headquarters of the League. Cases from which partial fee is received should be reported but indicated as such.

The League wants a list of all cases treated prior to August first but they must be sent on separate blanks and so indicated. Kindly attend to this duty as such a list has a definite value in the future welfare of our profession.

All reports must be sent to the League in order to make a complete list and each dentist and society will be given full credit for services rendered.

When report blanks cannot be secured, they may be improvised as follows:

Name and address of Dentist doing work.

Date of work.

Name of patient.....Regiment.....Company.....Navy Marines.

Character of work done.

This service is gratuitous.

Requirements governing the preparation of the mouth's of applicants for enlistment will be found in the July issue of The Journal of the National Dental Association; also in several other Dental Journals of same month.

IT IS IMPORTANT.

That each letter and each figure is written plainly. The League has been greatly handicapped by the careless writing of names and addresses. You know your name and where you live, therefore, kindly assist us by plain writing or printing.

Address all communications to the Preparedness League of American Dentists, 131 Allen Street, Buffalo, N. Y.

Dental Mobilization and the War

COMMITTEE ON DENTISTRY, GENERAL MEDICAL BOARD COUNCIL OF NATIONAL DEFENSE.

L. L. Barber, Toledo, Ohio.
J. W. Beach, Buffalo, N. Y.
G. V. I. Brown, Milwaukee, Wis.
Alfred C. Fones, Bridgeport, Conn.
Thomas P. Hinman, Atlanta, Ga.
Otto U. King, Huntington, Ind.
John D. Milikin, San Francisco, Calif.
F. B. Moorhead, Chicago, Ill.
Henry W. Morgan, Nashville, Tenn.
Charles H. Oakman, Detroit, Mich.
Weston A. Price, Cleveland, Ohio.
Herbert L. Wheeler, New York City, N. Y.

Wm. H. G. Logan, CHAIRMAN, *Chicago, Ill.*

JOINT MEETING OF THE COMMITTEE ON DENTISTRY OF THE GENERAL MEDICAL BOARD AND THE DEANS OF DENTAL SCHOOLS.

Meeting called to order by Dr. Wm. H. G. Logan, Chairman of the Dental Committee, General Medical Board of the Council of National Defense.

On behalf of the Dental Committee of the General Medical Board, I desire to explain to the Deans of Dental Colleges here assembled that the purpose of this conference is to first acquaint you with the results of the efforts that have been made to secure exemption of Medical and Dental students and the required number of their teachers of military age to make it possible to continue the education of a sufficient number of men to be graduated annually to properly meet the needs of the Army and Navy and our civilian population during the years this war continues.

After being informed as to the present status of the question of exemption of Medical students, you will be in a position to intelligently consider the problem of supplying the Dental needs during the present War emergency. Altho I have other important questions upon

which we need your advice, they will not be presented until the afternoon session, because we have a number of Government officials representing the War department present who have other impelling duties, but have kindly consented to accept our invitation to advise with you for a brief period this morning.

The following representatives of the Surgeon General's Office and of the General Medical Board of the Council of National Defense and Deans of Dental Schools, members of the Committee on Dentistry or of Sub-Committees were present:

Dr. Franklin Martin, Chairman of General Medical Board and Member of the Council of National Defense.

Major Victor C. Vaughan, Chairman of Legislative Committee of the General Medical Board.

Arthur D. Black, Northwestern University Dental School.....Chicago
Thomas B. Hartzell, College of Dentistry, University of Minnesota.....Minneapolis
Henry W. Morgan, Vanderbilt University, Dental Department.....Nashville
William E. Grant, Louisville College of Dentistry.....Louisville
F. M. Casto, Western Reserve University, Dental Department.....Cleveland
Truman W. Brophy, Chicago College of Dental Surgery.....Chicago
M. L. Ward, University of Michigan, College of Dental Surgery.....Ann Arbor
Henry T. Smith, Ohio College of Dental Surgery.....Cincinnati
F. T. Breene, University of Iowa, College of Dentistry.....Iowa City
F. R. Henshaw, Indiana Dental College.....Indianapolis
Charles Channing Allen, Kansas City Dental College.....Kansas City
Daniel H. Squire, University of Buffalo, Dental Department.....Buffalo
Chas. Turner, Thomas Evans Museum and Dental Institute, School of Dentistry, University of Pennsylvania.....Philadelphia
B. Holly Smith, Baltimore College of Dental Surgery.....Baltimore
S. H. Guilford, Philadelphia Dental College.....Philadelphia
G. S. Junkerman, Cincinnati College of Dental Surgery.....Cincinnati
J. P. Harper, St. Louis Dental College.....St. Louis
Harry M. Semans, Ohio State University, College of Dentistry.....Columbus
J. H. Kennerly, Washington University, Dental Department.....St. Louis
H. E. Friesell, University of Pittsburgh, School of Dentistry.....Pittsburgh
Alfred R. Starr, New York College of Dentistry.....New York City
Wallace Wood, Jr., Tulane University, College of Dentistry.....New Orleans
William Carr, College of Dental and Oral Surgery.....New York City
William Rice, Tuft's College, Dental School.....Boston
Shirley W. Bowles, Georgetown, Dental Department.....Washington
J. A. C. Hoggan Medical College of Virginia, Dental Department.....Richmond
D. M. Cattell, University of Tennessee, College of Dentistry.....Memphis
T. O. Heatwole, University of Maryland, Dental Department.....Baltimore
J. Roland Walton, George Washington University, Department of Dentistry.....Washington
C. V. Vignes, Loyola University, School of Dentistry.....New Orleans
Thomas P. Hinman, Atlanta Southern Dental College.....Atlanta
Edward B. Rheinhart, Western Dental College.....Kansas City
I. D. N. Broomell, Temple University, Philadelphia Dental College.....Philadelphia

Members of the Committee on Dentistry and sub-committees:

J. W. Beach, Buffalo.
Herbert L. Wheeler, New York City.
Weston A. Price, Cleveland.
Otto U. King, Huntington, Ind.
L. L. Barber, Toledo.
A. H. Reynolds, Philadelphia.
Homer C. Brown, Columbus.
H. E. Friesell, Pittsburgh.
T. B. Hartzell, Minneapolis.
T. P. Hinman, Atlanta.
A. C. Fones, Bridgeport.

The following guests were also present:

Col. T. H. Goodwin, Royal Army Medical Corps of England.

Col. C. Dercle, Medical Corps of France.

Major Robert E. Noble, Medical Corps U. S. A.

Major Theodore C. Lyster, Medical Corps U. S. A.

Col. Wm. O. Owen, Medical Corps U. S. A.

The following were introduced by the Chairman and addressed the Conference:

MAJOR VICTOR C. VAUGHAN: Mr. Chairman, Deans. Your Chairman has exaggerated my knowledge and my experience. Bearing in mind what has happened abroad, and especially in Great Britain, the Committee on Legislation of the General Medical Board of the Council of National Defense, which includes Dentistry, some two months ago I addressed a letter to the Secretary of War asking that medical and dental students, and pre-medical and pre-dental students, be exempted from draft. There was at that time a provision in the draft bill for such an exemption. The Secretary of War declined to sanction such an exemption. I don't want this to be understood as a criticism of the Secretary of War. I have had several interviews, and have written several letters to Mr. Baker, and I am sure that he is a man who is thoroly honest in his mental processes. He is determined, and you can see why he is determined, that there shall be no class exemptions in this draft; that the responsibilities and duties should fall upon all alike. That is his purpose. That is the purpose of the administration. He said if such students were exempted, there would be an equal demand or a demand along the same lines at least, for the exemption of other students—engineers and possibly others. In declining to exempt these students, Mr. Baker said the bill gave him wide discretion in the matter, and that he might—he did not say he would—furlough students to continue their professional education. Owing to that statement, no effort was made to strengthen or to carry thru the exemption provided for in the bill, and, without opposition, it was stricken out. I think I can say about as certainly as I can say anything that there will be no exemption in the draft for medical or dental students. I am sure that is settled. In fact, the draft is to be inaugurated within a few days. I don't think there is any need of trying to get exemption for medical and dental students. Mr. Baker does not think that with the draft there will be a large number of these students affected. I think that the number will be large. He figures that out of nine or ten million young men registered, and with only five or six hundred thousand men to be drafted, one out of twenty would not amount to a great number. I think there will be more than one to twenty. In the first place, medical and dental students will show above the average physical qualifications. In the second place, they will show far above the average in mental qualifications, and in the third place, and this it seems to me will increase the number of students drafted very largely, very few of these students can claim exemption on the ground that they have dependents who must be taken care of. Most dental and medical students have

no one dependent upon them. The very fact that they are in schools, and that they are paying their way or some one is paying their way for them shows that they have no great financial burdens to carry. I am inclined to the opinion that it will be found, when the draft is completed, that a much larger proportion of dental and medical students will be drafted than the average will amount to from the different classes. I am afraid that the number will be much greater. Now, the question of furloughing dental and medical students. I proposed to Mr. Baker that I did not like the word "furlough" because, Major Lyster will correct me if I am wrong about this, it was my understanding at the time that when a man is furloughed he must be paid, and we are not asking that these students be paid even the pay of a private—$30.00 a month. So after the Secretary of War declined to make any exemption, the question of furlough came up, and Provost Marshal General Crowder says, and I guess he knows, that no man can be furloughed without pay of his monthly salary. That is a very important point.

I asked Mr. Baker that all students who were actually registered as dental or medical, pre-dental or pre-medical students, on June 5th—who were actually registered—be furloughed or exempted. I am sure that you will all agree with me that we don't want our dental or medical schools filled up with men who are running to them to get away from the draft. I happen to know that one medical school, running a summer session, as a part of its regular session, has advertised widely that medical students would be exempted from the draft, and I saw a newspaper statement from the President of that school the other day that whereas a year ago they had four pre-medical students, they had on the first of July of this year forty-nine. I am absolutely out of sympathy with any such method of inducing students to go into the medical or dental schools. (Applause).

I am inclined to think, and this is only my personal opinion, that Mr. Baker cannot always see things in the same light that we can, altho he is a very just man and thinks justly. The first time I had an interview with him about this matter, I think that he was rather repelled. He thought that it was an undue magnification of the importance of our profession that led me to make this request, and that was quite natural. That would strike any man outside of the profession. But I put it to him, and he saw at once, that they were not going to stop instruction at Annapolis, at West Point, and at Fort Leavenworth. These young men are preparing to be Officers in the Army. You are not going to put them into the ranks. You are going to keep them at these military schools and prepare them to be officers, and that is what we intend to do with dental and medical students. A man who is a Junior or a Sophomore in a dental or medical school might go into the line as a private and serve his country; but in doing so you deprive the country of a man who, within a year or two will be an Officer. So I made this proposition: First, the one mentioned a while ago, that only students who are actually registered as medical, dental, pre-medical and pre-dental students on June 5 be exempted or given furlough, and furthermore that the furlough or exemption should be temporary as to time, and conditional; that the furlough or exemption, whichever it might be—I preferred exemption, because I thought furlough was impossible—should be limited to one school year, and that at the end of this school year the Dean or the President of the school should report on each student, and if he was not doing his work, his exemption or furlough should expire, and he should be put into the ranks. That would be a good thing for us teachers. Furthermore, the proposition was that dental and medical stu-

dents who should finish their courses under these exemptions or furloughs should be obligated to serve at least one year in the Army or Navy of the United States after graduation. If they had any advantage, they should be made to pay for it. Then I went so far—regarding medical men—as to ask that all medical men—graduates in medicine—(I don't think I mentioned dentists, but that is included in all this work) registered, not drafted, but registered, should be turned over to the Surgeon General, and the Surgeon General authorized to take from that list the registered medical men so many as may be necessary to fill up their respective Corps. Mr. Baker again said, "You cannot do that, because that would be an undue draft on the medical profession." He is just as fair on one side as he is on the other. I asked that all registered medical men be turned over to the Surgeons General and that they be allowed to pick as many of the kind of men as they wanted. His sense of justice saw that it would be an undue draft upon the profession, and he said it could not be done.

Now there is just one thing more I want to say. The men on the Committee on Legislation are divided upon one point. The majority of them are confident that we are going to get enough medical men, including dentists, to fill up the quota. I, too, believe that for the first million men this will be done. If the Army is increased very greatly and goes up to two or three million, I don't believe it will be possible. While the draft age is probably the best age to get soldiers for the line—young, pliable, easily trained, their reflexes not as set as ours, and more easily changed—the draft age is not the one to get the best professional men. It is our opinion that it would be far better if we could get men between the ages of 25 to 37, or possibly 40. Now it seems to me that this is a very serious question before the two professions, or the one, if I may speak of them together. There are already about 10,000 applications for commissions to the Medical Reserve Corps of the Army. For the first million men we need 7,000. We have 10,000 applications, and we need 7,000 medical men. Why worry about it? Probably we should not, but I am worrying. I don't think I have ever carried a greater worry than this. In the first place we don't know how many men will accept those commissions. Speaking about medical men, out of 4200 men who had asked for commissions during times of peace and who were offered their commissions when war was declared, 1700 accepted them. Now, while 10,000 men have asked for commissions, only 3700, up to the present time, have really been commissioned. There will be a much larger proportion, as the thing is held up mechanically in the Adjutant General's office, where all commissions must be signed. The Secretary of War must sign each one of these commissions. Then again, we are getting a large number of the very best men in this country, and there is no man who makes a bigger sacrifice than the dental and medical man, especially the man between thirty and forty-five years of age, or thirty-five and forty-five years of age. Those are the best. They have spent thousands of dollars in getting their education. The better part of them are just beginning to pay off their debts; pay for their homes. They are making anywhere from $5,000 to $15,000 a year, and, knowing that, they have gone under obligations accordingly. For these men to go into the service at a Lieutenant's salary of $166.66 a month, or as Majors at $250 a month, constitutes a great sacrifice; but the greatest sacrifice comes when they return and find that they have no practices. I know a young man who left his practice last summer and went to the Mexican border. Just the kind of man I spoke of above, making $1,000 a month and paying off his debts. He worked for $166.66 a month until Octo-

ber or November, and came back without any practice at all, and was just beginning to get back where he was when now he is on his way to France. There is no man who makes a greater sacrifice; but there is a bigger thing, however, than that. We must win this war. (Applause). And we must make whatever sacrifice is necessary, even if it means the crippling of our schools, the interference with civil practice. We must do it, and the medical department —including the dental department, must not fall down, whatever the cost may be, and it may be necessary to resort to a draft of medical and dental men. The Judge Advocate General has been asked about this. We hope we will be able to avoid a special draft, but we want to be prepared, and he has informed us that Congress has the right to make a special draft from any trade or profession, or any class of men that the good of the country demands. My advice, from my own experience, is this: (It may be wrong. You may be able to do what we have not been able to do. It is altogether possible.) I think it is useless to try to get exemption for medical and dental students. We will again ask, when the draft is finished, for a statement as to the number of medical and dental students drafted. If that is large, we will again ask that in part of in whole they be temporarily furloughed, even if the Government has to pay their salaries while we are sending them to medical and dental schools.

COLONEL T. H. GOODWIN: Surgeon General Gorgas was just on the point of starting with me when he was unfortunately called away. He had to go to the Adjutant General's office, and he asked me to express his extreme regret at not being able to be present.

I really don't know that I can tell you very much about our experience, because we did not have conscription at first. Conscription came in later on in the war. At the beginning of the war a large number of medical students came into the Army and some of them went as officers and some as privates. During the first year of the war I think it was foreseen that they would be short of medical men, because I know that a large number of those students, if not all, were sent home to complete and continue their medical training. Later on conscription came in. I am not certain as to whether medical students were exempted or not, but I understand that they were. I believe that was done, but am not certain. I know that medical schools are going on with their training, and I believe that students were exempted—those who were already undergoing instruction. That must I think be so, because the shortage of medical men has been very seriously felt in England, and they are using every effort to complete the training of medical men without shortening the curriculum, as they want to give these men complete training and turn them out as efficient, fully qualified men. One thing is certain—that as soon as a medical student obtains his degree he comes into the Army Medical Reserves. This is the "Special Reserve." He is commissioned as a Reserve Officer, and is called upon when his service is required. Regarding dental students, I cannot say much. There are about 450 dental surgeons employed with our Army. But with regard to the regulation—exemption or otherwise—of dental students, I cannot tell you for certain. If there are any questions, I should be glad to try at least to answer them.

DR. W. H. G. LOGAN: I will ask Colonel Dercle, of the French Army Medical Corps if he will tell us about the Medical and Dental Corps of his country.

COLONEL DERCLE: There is no need for exemption in our Army. Everyone is qualified, and no one is exempted. There is a circular which pertains to the dentists in our Army. This circular of February 26th, 1916, is of great service to the Federal Army. Soldiers provided

with a diploma as Surgeon Dentists in the Reserve Army either or in the Territorial Army or in the Reserve of the Territorial Army may be, according to the need, during the war asked to serve as military dentists, with the troops, with the units in the field, and with the base hospitals. Every one in the Military Army is under the control of the highest commissioned medical officer (Adjutant). There are only dentists who have diploma delivered by the French Faculties who may be recruited. Upon showing their diploma, they are asked to serve in the medical service. Those who are teachers in State dental schools are named first, and we begin with them. The number of dentists in our army are 1,000 in total. Their uniform is the same as the uniform of the Adjutant nurses. They have the same rank. The collar contains the silver caduceus, with the letter "D" near it, they wear on their sleeves an armlet. (Red cross on white ground.[1] Personnel is composed of one Lieutenant, specialist; one Diplomaed Surgeon, dentist; two mechanics, Dentists, for each automobile. There are now 14 automobiles in the field. (Photographs illustrating these automobiles were here shown.) They can take care of 50-70 soldiers every day. I have a book which gives the composition of the carriage with the personnel which it contains.

Those automobiles have been made according to Lieutenant Gaumerois's plans. They are constituting rolling cabins and laboratories.

Appointment of the Surgeon Dentists in the French Army as following:

A. In Field Armies.

1st. In the advanced units:

2 patients, by each Divisional Stretcher bearers' parties.

One, steady in the Unit, in order to cure patients on place.

The second, unsteady, going up and down to the different parts of Division of Rest.

1 by each Army Corps Stretcher-bearear's parties.

1 by each automobile.

2nd. In Road transport zone.

1 in each hospital.

1 in each station for slightly wounded and injured.

B. In the Interior.

1 in every place where is a depot of troops.

1 in the training camps.

Some, according to the importance of the Units, more or less, in the Stomatologic Centers (prothesis of faces remaking and in centers of toothless.)

Material composed of—inadvanced units:

For the dentists of Stretcher-bearers' parties: A box of stomatology No. 6 of the Nomenclature, with moreover, a portable"tour" and a folding chair with head. Hall by each parties.

In road transport zone:

A small dental laboratory with metals necessary to prothesis in hospitals, with less important installation in the station for slightly wounded or injured.

In the interior: The installations already being there and, if not sufficient, apparatus, instruments and supplies which are thought necessary.

MAJOR THEODORE C. LYSTER: You all realize the need of group work, as this is so well established in civil communities. Group work is the only effective way of doing good work. We have realized that in the Army. The Surgeon General has realized it to the extent of desiring to group the various special fields under heads so that they can be effectively administered and not only give an opportunity to men who are especially trained in these fields, but insure these men of the opportunity to carry on the work in these special fields. Those two points are the ones which have influenced us largely in the present plans that we are trying to put into

[1] Vide: pages 2-3.

practical operation. We have been authorized by the Surgeon General to group up under one heading—"Head Surgical Unit"—the various specialties that deal with the surgery of the head, the eye, ear, nose and throat, brain, and oral surgery. Now we need specialists—the best men in the profession—to enter these various branches. We need assistants who are trained along these lines to carry on the work of assistants. We have found that we could group such work as ear, nose, and throat under one head for simplification. We have grouped the eye men under one head, and the brain men under another head. When it came to oral surgery, we realized we had two fields that had to be closely associated: The man who is doing plastic surgery of the entire face, whether it deals with the mouth or anything else, has been grouped under the head of "Plastic Surgery," and, closely allied to him, the man more or less specialized in the field limiting his work to the mouth. We need men on both sides who will devote their time to this work. We have had to group under one head a double branch in which we have asked Captain Blair, whom you all know as a man who has done excellent surgery in this field, to take charge of one section, and have asked Dr. Logan to come in and assist Captain Blair, on that branch, and to have complete charge of the dental problems that are related to this work. We have one object to attain, and that is to get the best possible care for our patients. The best must be obtained. The American people would stand for no less than the best, and under this plan we will try to put into practical operation a working plan and ask the best men in your professions, either as oral surgeons, dentists, or men with plastic experience, to come into this group, the same as the eye men come into the eye group, and the ear, nose and throat men come into the ear, nose, and throat group.

COLONEL WILLIAM O. OWEN, M. C. U. S. A.: Dr. Logan has referred to a matter of which I was in charge a few years ago, and I suspect you have all read the whole history as published in the Dental Cosmos for July. It was an interesting experience to me, and I rejoiced in it. It might interest you to know that the hand writing below that little picture which was published with the article is in the personal handwriting of Ware, and the name—William H. Ware— signed on that is his personal handwriting. There is one part which I did not think to put in at the time which is very interesting. When Ware completed his first month's dental work on the little island of Congidor in the little office, the picture of which was published, I had told him when he commenced, that part of his daily work should be to make a daily record of the name, rank, etc., of each individual patient, and to make a complete diagnosis as rapidly as possible and keep a daily record of it. At the end of the next month I had him make up a report, and instead of making the report as was our habit—using technical terms—Ware made it out in ordinary language, and I had him rewrite it and put it into technical terms. He then brought the report back to me and asked me how to prepare it for my signature. I told him he was not to prepare it for my signature; that he was to put his own name on it and his own rank. It was then signed by W. H. Ware, private, H. C. U. S. A. I then signed the paper myself, and it is now somewhere among the files in the Surgeon General's office, with William H. Ware's name signed to it. I have followed the dental profession in the Army and have found the need of dentists, and hope you will succeed in getting what you wish.

That report, as I remember it, was made either in December of 1898, or in January or February of 1899. Ware felt quite keenly the desire to demonstrate and so did Gibbons, who was killed—

fully that there was a place for dentistry in the Army, and they enlisted for that purpose.

I was speaking a few days ago with a few of your gentlemen, and I said to them that "You are my brothers." You are medical men as I myself am. (Applause). If you are not medical men and do not understand the anatomy of pathology of the human body and do not understand the effect of disease upon it, you cannot make a good dentist. I have said to my classes, for I have taught anatomy for nearly ten years in dental schools, as I have been professor of anatomy for nearly ten years, and I have said to them that I hoped when they went away from the school they would remember that they were dentists and not dental mechanics, for there is the world of difference between dentists and dental mechanics. (Applause).

I took these dentists with me to the Philippine Islands with more joy than I can tell you of, because I had been forced to take care of teeth. I did not like to do this work because I knew I was not up to the job as it ought to be done, and I felt that there is a serious necessity for dentists in the Army. He has a real place to fill—a real man-sized job if it is done and done in the right way, and I believe the dentist in the Army is trying to do it and to do it right. If he does not, I have no sympathy for him. The reason I took the dentists with me to the Philippines was because I felt the real necessity for them in the Army of the United States.

Regarding the rank of dentists in the Army, it is rather a difficult matter to discuss. A man dare not open his heart even before a group of friends as he can in talking to individuals. My heart is sincerely in this. I can see no reason why, when a man shall perform an act that is of real service to other men, why he should not be rewarded with honor as well as with pay. It is a curious thing in Homics that men will always look at their brother men to see the mark which is placed upon them by their country, and if that mark is not of a high class of distinction, they will think and will say that man's own country does not think very highly of him, and we must, therefore, await such an opportunity as will determine for us whether this individual man possesses these qualifications or not. If he does, we will give him the honor. If not, we will not. In an army at war, men are in too short contact with each other to determine these things. The matter must be determined by the honor and distinction which the executives and legislative body have chosen to place upon that individual man. Each army, the world over, has its place in which it marks the particular function of each man, and the particular rank which he has been given to enable him to do that work. In the United States Army, if you will look at a man's collar you will be able to determine at once what Department of the service he belongs to, and on the shoulder the rank, and on the forearm whether he is a commissioned officer. If he is, he will wear a band. If any particular class shall be segregated by itself and not have these official marks and the official honors, it makes it very difficult for it to render the service which it would otherwise be able to do. That is why I have always contended that the doctor, the dentist, and the veterinarian should be given those insignia and should be given that respect by his own people. **We cannot do our work without it.**

MAJOR ROBERT E. NOBLE, M. C., U. S. A.: I regret exceedingly that the Surgeon General was unable to attend this meeting, as he is now at the Secretary's office. I was rather taken by surprise, as I expected that the Surgeon General would extend to you his greet-

ing and welcome; his thanks and appreciation for what the dental profession is trying to do and is doing in the way of the medical preparedness. We realize that medical preparedness is an asset to the Government and to be complete, it must be associated largely with the dental side of the profession. We need dental surgeons, and you are providing them. We need a large number—not less than 2,000. Personally I would like to see 4,000 dental surgeons in the reserve, as it would enable us to pick and choose and assign the dental surgeons according to duty ascending to their specialty. We need oral surgeons, and we want them in large numbers. Your Committees have worked hard and faithfully, and the result is shown by the fact that we are getting each day large numbers of acceptances of commissions. We have now about 679, perhaps not quite so many. We are beginning to see daylight and supply the demand for dental surgeons.

There is some question as to the future of the dental schools of the country in regard to conscription. This is a matter that the office has been work ing faithfully to have adjusted, that is to leave dental students in the schools until they complete their course of study. We have also worked for the same thing as regards medical schools. No definite policy has as yet been established. The chances are that the number of dental students drafted will be comparatively small, but if drafted, we have asked that they be assigned to the Medical Department. Should dental surgeons be drafted, a commission is open to them. I may be speaking without absolute authority, but see no reason why, because a man has been drafted (and the draft is for the enlisted personnel of the Army) he should not be permitted to apply for a commission in the Dental Corps, with your help we will no doubt in a very short time have the requisite number of dentists in the service, and I trust that there will be no interference with dental education.

DR. VAUGHAN: The Secretary of War has in writing stated that all medical men and dentists drafted will be turned over to the Medical Department for disposal. If they are rejected, they will have to go into the line. All medical or dental graduates, whether they have applied for commissions or not, will be turned over to the Surgeon General. I expect that all medical and dental students who are drafted will, like graduates, be turned over to the Surgeon General to be used in the hospital corps, etc., as assistants, etc.

We have asked for the same rank, whether you are a physician, an opthalmologist, an otologist, a dentist, or a veterinarian. The same rank for the dentist as for the physician. I think the veterinarians were somewhat surprised. They came down here to knock us down with a club and found that we had already asked for the same rank for them as for the medical men. The present rank allowed the medical men, dentists, veterinarians, and sanitarians is too low. We are asking that the higher ranks be opened to the Medical Corps. The English army has between twenty and twenty-five Major Generals in its Medical Department, and the French Army has 25 General Officers in its Medical Corps. The Line Officers may go to Norfolk or to Newport, where there is no possibility of being in danger, and may within a short time be a Colonel or a Brigadier General. The medical man who goes to France or anywhere else, and does what he can, can never hope—whether he is in the regular army or in the Medical Officers Reserve Corps—to be anything but a Colonel. In the line there is one General Officer, rank above Colonel, for every 180 commissioned officers. In the Medical Corps there is only one General

Officer, whatever the number of commissioned officers may be, and there will be 7,000 for every million men, with only one General Officer. Dr. Crile, who is now in France, sits down at the table of medical men and consults with them—and I doubt if they have men comparable to him—but he is compelled to sit at the foot of the table. The other men will be Major Generals, etc. We are asking, we have been asking, and we are going to continue to ask that for every 200 commissioned officers, the Medical Corps of the Army should have one General Officer, five-tenths of one per cent, while in the line there is one General Officer for every 180 men, and in the Navy there is one General Officer for every 200 commissioned officers, and we are simply asking for the Army the same rank that is granted to the Navy. We may need your help in this matter. (Applause). We have asked the War College, and they have turned us down. I want to say confidentially that we may have to ask Congress, and if we do, every man in this room can help us.

DR. FRANKLIN MARTIN,* Chairman of General Medical Board, and member of the Council of National Defense, spoke as follows:

Gentlemen: I want to thank you for coming to Washington to help us and to congratulate you on the work the dentists of the country are doing to assist the Government at this crucial time. You have achieved results for the Dental Reserve Corps in three months, that has taken us a year to accomplish for the Medical Reserve Corps.

In Germany we have a foe we must take seriously. Recognizing that fact the Government is making war contracts on a three year basis. It is obvious that the Army needs medical and dental officers and needs them immediately. We need for the Army, 21,000 doctors and 3,000 dentists. I trust that you gentlemen will use your influence among the dentists, urging them to enroll in the Dental Reserve Corps.

I want to speak here of the magnificent work done by the offices of the Surgeons General of the Army and Navy. With organizations established to care for a few hundred members of the regular medical corps, they have expanded rapidly, quietly and without confusion, the expansion in the office of the Surgeon General of the Army being at the rate of 100% a week and that of the Surgeon General of the Navy 400% since the outbreak of the war. Too much cannot be said in their praise for their untiring devotion and almost superhuman efforts to bring the medical personnel up to the required quota.

DR. BROWN: Before Colonel Owen and Major Vaughan retire, and in answering their request for support, I would like to tell those gentlemen that, representing the dental profession for the last two or three years in a legislative capacity, it has been our purpose to cooperate in every possible way. I will cite one instance. Last year when legislation regarding the Navy Dental Corps came up, and it was brought to our attention that the provision we were trying to bring about was not in effect for the Medical Corps of the Navy, we asked if it was not just, and upon being told that it was, we asked that the Medical Corps be included with the Dental Corps in regard to this legislation. This will indicate to you our desire to cooperate with the medical profession, and I wish to say to Colonel Owen that I have had the highest regard to his interest in the dental corps, and know of the things he has done, and I am sure that every dentist here, or wherever he may be, will cooperate with him, and appreciate his

*Because of the absence of a stenographer during the period when Dr. Martin was speaking we are only able to present a few of the points covered in his address.

efforts in bringing about the status which is in harmony for the three Corps.

DR. TRUMAN W. BROPHY: The passage of time has brought me to be the Senior Dean of the United States, and I think I can express the views of the United States, and I think I can express the views of all dental schools when I say we appreciate keenly the work that Colonel Owen has already done, and we will stand behind him to the end in carrying out the work he has begun.

ADDITIONAL PRELIMINARY DENTAL EXAMINERS.

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*Lieut. Herbert L. Wheeler, 560 5th Ave., New York City.

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*Member of Dental Reserve Corps.

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William S. Sykes, American Embassy, London, Eng.

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Editor and General Manager.
OTTO U. KING, D. D. S., Huntington, Indiana.

Associate Editors,
THOMAS P. HINMAN, D. D. S., Atlanta, Ga.
HARVEY J. BURKHART, D. D. S., Rochester, N. Y.
THOMAS B. HARTZELL, D. M. D., M. D., Minneapolis, Minn.

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VOL. 4 AUGUST, 1917 No. 8

Editorial Department.

TO MILITARY DENTISTS.

If you desire The Journal forwarded to you, please advise this office promptly of your new address. State your military address in detail, giving division and regiment and company to which you are attached. The Journal may be forwarded without extra charge to foreign points as well as American camps. Address a post card to The Journal of the National Dental Association, Huntington, Indiana.

THE 1917 MEETING.

As everything now looks, the 1917 meeting, the week of October 22nd, will be the largest and most important ever held by the National Dental Association. Certainly more things of interest to the profession have transpired within the past ten or twelve months, than in any twelve months within the history of the Association.

The program is one of the greatest importance. The clinics will be of the highest order possible, and so instructive, no member can afford not to see them. It is the duty of every member of the National Association to be at the meeting in New York City in October.

The work being done on the war front will be given a place on the program; in fact everything up to the last word in dentistry will be taken up. Do not miss it. A **Cordial Welcome** is extended to every member of our Association to attend this **Greatest** meeting.

L. L. BARBER, President.

OUR PATRIOTIC DUTY TO THE ENLISTED DENTIST.

Have the dentists of your community taken steps to protect the practice of the dental officers who have gone, or are going, to The Front? Has your component or state society acted?

All of us cannot serve with the troops. But we can, and should, interest ourselves in the development of a plan to afford some measure of financial relief and protection to the patriot dentists who are sacrificing everything to serve their country.

DELAY IN ISSUING COMMISSIONS.

Many dentists who made application for commission in the Dental Reserve Corps have received notice that their request for commission has been granted, but have not received the commission, altho more than ample time has elapsed since the notice was received. The delay probably is caused by the fact that, the applications have to go thru the regular form of entry in the Adjutant-General's Office after approval by the Surgeon-General; the commissions must be made out and are then signed by the Adjutant-General and by the Secretary of War. During each of the past few weeks a large number of men have been recommended for commission in the Dental Reserve Corps alone; in addition similar commissions are being made out to thousands of men in other departments of the service. This necessarily means an overwhelming amount of work for the Adjutant-General's Office, for the Adjutant-

General and the Secretary of War. We understand that so far as the Medical and Dental Reserve Corps commissions are concerned the Adjutant-General's Office is at present several weeks in arrears; hence the need of patience on the part of those who are looking for their commissions. Of course no one is ordered into active service until he has received his commission. We must all be patient with the Surgeon-General's Office, as Major Noble, in addressing the meeting of the Deans of the Dental Colleges, on July 18, in Washington, D. C., reported that this office had increased 100% each week since war had been declared.

FIVE DENTAL AMBULANCES FROM A SINGLE PATIENT.

Thru the generous patriotism of Mrs. W. B. Thompson, of New York, five dental ambulances are assured for service with our New York troops in Europe. Mr. and Mrs. Thompson have done a great deal in a patriotic way since the war began. Among other things, Mr. Thompson organized and equipped a motorcycle machine gun battery in Yonkers, N. Y., and is now acting as a member of the American Commission to Russia, which went out at the suggestion of the Red Cross War Council.

The Journal congratulates this New York dentist who has received this magnanimous check for such a commendable purpose. The modesty of this dentist, who shrinks from publicity, will not permit us to announce his name. However, we cannot refrain from commending his humanitarian spirit in soliciting funds for such a worthy cause. These examples of thoughtfulness and generosity should stimulate and encourage others to similar deeds.

In the Preparedness League Department will be found reports on the dental ambulance and we expect in a coming issue of The Journal to publish a complete report of all the dental motor ambulances and their donors, that have been equipped and presented to the government.

There will be two of these dental ambulances completely equipped for the United States Army in France, on exhibition at our great meeting in New York City, October 22-26, 1917.

MAKE YOUR RESERVATIONS.

If you are planning to attend the Annual Meeting of the National Dental Association, which will be held in New York, October 22 to 26, we suggest that you make hotel reservations at once. New York hotels have been crowded for some months and there is every reason to believe that they will be taxed to their capacity during this meeting. Hotel Astor will be the Headquarters.

FRANKLIN MARTIN, MED. '80.

Dr. Franklin Martin has been the combined back-bone and nerve center of more important movements than probably any other living member of his profession in America. In 1888, with Dr. W. F. Coleman, he organized the Post-Graduate Medical School of Chicago, and was for many years the dominant force in its growth and development. While thus engaged, he established the Charity Hospital, an absolutely free institution of thirty beds, to which he gave much of his service and for which, in some way or other, he found the means of support. In 1905 he established *Surgery, Gynecology, and Obstetrics,* which was declared "too good to last."- Anyone who made such a prediction did not know Dr. Martin's caliber—it has not only lasted but has even raised its standards. One department, the International Abstract of Surgery, illustrates something of its value. Incooperation with the leading similar journals of Paris and Berlin, it is supplied with abstracts of all the articles in its field appearing in Latin or in any of the principal modern languages, including Swedish, Norwegian, and Russian.

The successful maintenance of such a periodical would satisfy the ambition and exhaust the energy of most men even of the highest abilities. But Dr. Martin thinks hard even when he plays. On a vacation trip to the Mediterranean in 1910, he conceived the idea of providing for an association of surgeons whose meetings would be devoted primarily not to talking about their work but to seeing it. The details of a two weeks' clinical meeting worked themselves out in his mind, and in the fall was held the first meeting of the body that has become the great Clinical Congress of the Surgeons of North America. One result of the meetings of the Clinical Congress was Dr. Martin's realization that the unequal standards of education and experience set for surgeons in various parts of the country were injurious to the welfare of reputable surgeons and dangerous to the lives of helpless patients. With Dr. Martin, such a realization meant effective action. During the winter of 1912-13, he visited every large city in the country to consult with small groups of men who should be interested in remedying the situation. Only a few more than four hundred men were approached; four hundred of them met in Washington in May, 1913. Out of that meeting grew the American College of Surgeons. At the first convocation in Chicago in November, 1913, the president of the Royal College of Surgeons of England, in felicitating the newly organized body, predicted for it beneficent influence and every success. His predictions have already been realized.

It is not at all strange then that when the immence war prompted the organization of the Council of National Defense, the presidents of the great medical and surgical societies nominated him as one of the three men from whom President Wilson should choose the medical member of that body. Of the three, President Wilson chose Dr. Martin; and there can be no reflection upon those not selected in the statement that Dr. Martin's services have more than justified the clear wisdom of selecting him.

Despite these demands upon Dr. Martin as organizer and administrator, he has maintained his keen interest in his purely professional work. He has published a number of monographs and articles in professional journals, he is a regular attendant upon the meetings of local and national societies, and he is more devoted to surgery today than he was thirty years ago. Not only the Medical School, but all Northwestern has reason to be proud of such an alumnus.—*Northwestern University Bulletin.*

The New York Meeting

National Dental Association Twenty-first Annual Meeting, New York City, October 22-26, 1917.

(A Tentative Program of the New York Meeting will be found as an insert in this issue.—Editor.)

OFFICIAL CALL.

To the Officers and Members of the National Dental Association:

The twenty-first annual meeting of the National Dental Association will be held at New York City, October 22-26, 1917.

The House of Delegates will convene at 2:00 P. M. Monday, October 22. In the House the representation of the various constituent societies for 1917 is as follows*:

Alabama	2
Alaska	0
Arizona	1
Arkansas	2
Army Dental Corps	1
California State	4
California Southern	3
Canal Zone	0
Colorado	2
Connecticut	3
Delaware	1
District of Columbia	2
Florida	2
Georgia	2
Hawaiian Islands	0
Idaho	0
Illinois	10
Indiana	5
Iowa	5
Kansas	3
Kentucky	2
Louisiana	1
Maine	1
Maryland	2
Massachusetts	1
Michigan	5
Minnesota	4
Mississippi	2
Missouri	4
Montana	1
National Capitol	1
Navy Dental Corps	1
Nebraska	3
Nevada	0
New Hampshire	1
New Jersey	4
New Mexico	1
New York	9
North Carolina	2
North Dakota	2
Ohio	8
Oklahoma	3
Oregon	2
Pennsylvania	6
Philippine Islands	1
Porto Rico	0
Rhode Island	1
South Carolina	2
South Dakota	2
Tennessee	2
Texas	3
**Trustees	9
Utah	2
Vermont	2
Virginia	2
Washington	3
West Virginia	2
Wisconsin	4
Wyoming	1

*This roll will be officially revised Sept. 22, 1917.

**"The Trustees shall be members of the House of Delegates, without the right to vote."—Constitution and By-Laws. Article V. Section 1.

The scientific sections of the National Dental Association, the Dental Corps of the Army, the Dental Corps of the Navy, are entitled to one delegate each.

The general meeting, which constitutes the opening exercises of the Scientific Assembly of the Association, will be held at 10:00 A. M. Tuesday, October 23. The various sections of the National Dental Association will meet Tuesday, October 23, at 2:00 P. M., and subsequently, according to their respective programs.

The Registration Department will be open from 8:30 A. M. until 5:30 P. M., on Monday, Tuesday, Wednesday and Thursday, October 22, 23, 24 and 25, and from 8:30 A. M. to 12 noon, on Friday, October 26.

L. L. BARBER,
President.
OTTO U. KING,
General Secretary.

MEMBERS OF THE HOUSE OF DELEGATES.

A Preliminary Roster of the Legislative Body of the National Dental Association.

The list of members of the House of Delegates for the session is incomplete, as a few of the state societies are yet to hold their meetings at which delegates will be elected. The following is a list of the holdover delegates and of the newly elected members, who have reported to The Journal in time to be included in this issue:

STATE DELEGATES AND ALTERNATES.

ALABAMA.

Delegates

Charles F. Chandler, Montgomery.
H. Clay Hassell, Tuscaloosa.

Alternates.

W. T. McDaniel, Athens.
Charles A. Merrill, Birmingham.

ALASKA.

No report.

ARIZONA.

No report.

ARKANSAS.

Delegates

Elbert Stewart, Little Rock.
E. L. Miley, Blytheville.

Alternates.

J. D. Jordan, Little Rock.
C. E. Carroll, Newport.

ARMY DENTAL CORPS.

No report.

CALIFORNIA STATE.

No report.

CALIFORNIA SOUTHERN.

Delegates

B. B. McCollum, 612 Baker-Detwiler Bldg., Los Angeles.
Bert Boyd, 1010 Story Bldg., Los Angeles.
Nye White Goodman, 708 Story Bldg., Los Angeles.

Alternates.

Leland D. Jones, 801 Watts Bldg., San Diego.
E. Leslie Williams, 427 W. 5th, Los Angeles.
F. A. Williams, 412 W. 6th, Los Angeles.

CANAL ZONE.

No report.

COLORADO.

No report.

CONNECTICUT.

Delegates

Edward S. Gaylord, 63 Trumbull St., New Haven.
Alfred C. Fones, 10 Washington Ave., Bridgeport.

Alternates.

Charles McManus, 80 Pratt St., Hartford.
Frank J. Erbe, 108 Bank St., Waterbury.

DELAWARE.

No report.

DISTRICT OF COLUMBIA.

*See Advertising Section.

FLORIDA.

No report.

GEORGIA.

Delegates

H. H. Johnson, Macon.
M. D. Huff, Atlanta.
C. N. Hughes, Atlanta.

Alternates.

A. A. Williams, Columbus.
S. H. McKee, Americus.
S. W. Foster, Atlanta.

HAWAIIAN ISLANDS.

No report.

IDAHO.

No report.

ILLINOIS.

Delegates

Wm. H. G. Logan, 29 E. Madison St., Chicago.
T. L. Grisamore, 29 E. Madison St., Chicago.
T. A. Broadbent, 25 E. Washington St., Chicago.
L. L. Davis, 81 E. Madison St., Chicago.

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*Report received too late for publication in this department.

C. B. Warner, Urbana.
A. D. Black, 122 S. Michigan Blvd., Chicago.
J. E. Hinkins, 1467 E. 53rd St., Chicago.
J. K. Conroy, Belleville.
J. P. Luthringer, Peoria.
L. B. Torrence, Chester.

Alternates.

F. E. Roach, Mallers Bldg., Chicago.
G. W. Dittmar, 59 E. Madison St., Chicago.
E. W. Elliott, 39 S. State St., Chicago.
D. M. Gallie, 32 N. State St., Chicago.
L. W. Strong, 30 N. Michigan Ave., Chicago.
P. B. D. Idler, 1315-30 N. Michigan Ave., Chicago.
W. A. Hoover, Gibson City.
J. C. Waddell, East St. Louis.
V. P. Perisho, Streator.
O. L. Frazee, Springfield.

INDIANA.

Delegates

F. R. Henshaw, 507-8 Pythian Building, Indianapolis.
A. R. Ross, Lafayette.
R. R. Gillis, Hammond.
R. C. Mayhall, Edinburg.
F. B. Garner, Johnson Blk., Muncie.
M. M. House, 1664 College Ave., Indianapolis.

Alternates.

J. O. Zubrod, Evansville.
E. R. Kibler, 1006 Hume-Mansur Bldg., Indianapolis.
M. A. Mason, Fort Wayne.
R. F. Lucas, South Bend.
F. M. Bozer, Logansport.
R. C. Whitmore, 724 Hume-Mansur Bldg., Indianapolis.

IOWA.

Delegates.

S. G. Barker, Jefferson.
J. G. Hildebrand, Waterloo.
R. H. Volland, Iowa City.
H. P. White, Sioux City.
E. R. Swank, Panora.

Alternates.

C. M. Kennedy, Des Moines.
J. A. West, Des Moines.
G. W. Slingluff, Burlington.
J. V. Conzett, Dubuque.
G. N. Beemer, Mason City.

KANSAS.

Delegates

C. B. Reed, Topeka.
F. O. Hetrick, Ottawa.
G. A. Crise, Manhattan.

Alternates.

C. A. Martin, Winfield.
F. A. Hixon, Atchison.
Willis A. Coston, Topeka.

KENTUCKY.

Delegates

E. D. Rose, Bowling Green.
H. B. Tileston, Sr., Starks Bldg., Louisville.
W. S. Smith, Starks Bldg., Louisville.

Alternates.

R. H. Leete, Prestonburg.
Walter Mathews, Lexington.
Garnett Smith, Starks Bldg., Louisville.

LOUISIANA.

*See Advertising Section.

MAINE.

*See Advertising Section.

MARYLAND.

Delegates

B. Holly Smith, Bowen & King Bldg., Baltimore.
B. Merrill Hopkinson, Professional Bldg., Baltimore.

Alternates.

E. W. Swinehart, Professional Bldg., Baltimore.
W. W. Dunbracco, Professional Bldg., Baltimore.

MASSACHUSETTS.

No report.

MICHIGAN.

Delegates

G. C. Bowles, 32 Warren Ave., W. Detriot.
Russell W. Bunting, Ann Arbor.
E. A. Honey, Kalamazoo.
C. J. Lyons, Ann Arbor.
W. A. Giffen, 609 Washington Arcade, Detroit.

Alternates.

G. F. Burke, 741 David Whitney Bldg., Detroit.
E. J. Chamberlain, 526 Ashton Bldg., Grand Rapids.
W. H. Elliott, 1539 E. Jefferson Ave., Detroit.
C. A. Burbridge, 303 The Gilbert, Grand Rapids.
F. Ward Howlett, Jackson.

MINNESOTA.

*See Advertising Section.

MISSISSIPPI.

No report.

MISSOURI.

Delegates

Wm. Conrad, 3666 Olive St., St. Louis.
M. B. Crume, 852 1-2 Frederick Ave., St. Joseph.
H. R. McCrum, Springfield.
C. C. Allen, Tenth & Troost Sts., Kansas City.
J. T. Hull, Butler.

Alternates.

George E. Haigh, Jefferson City.
F. M. Fulkerson, Sedalia.
T. G. Sugg, Carrollton.
C. C. Clark, 9 S. Clinton St., Kansas City.
J. D. Patterson, Kieth & Perry Bldg., Kansas City.

MONTANA.

No report.

NATIONAL CAPITOL.

*See Advertising Section.

NAVY DENTAL CORPS.

No report.

NEBRASKA.

No report.

NEVADA.

No report.

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*Report received too late for publication in this department.

NEW HAMPSHIRE.

No report.

NEW JERSEY.

*See Advertising Section.

NEW MEXICO.

Delegate

J. J. Clarke, Artesia.

Alternate.

M. J. Moran, Deming.

NEW YORK.

Delegates.

W. W. Smith, Rochester.
J. W. Canaday, Sr., Albany.
Lewis Meisburger, Buffalo.
A. C. Rich, Saratoga.
J. B. West, Elmira.
Stephen Palmer, Poughkeepsie.
Henry W. Gillett, New York.
A. C. Bickelhaupt, Syracuse.
Ellison Hillyer, Brooklyn.

Alternates.

A. P. Burkhart, Auburn.
A. M. Wright, Troy.
D. H. Squire, Buffalo.
A. C. Hitzelberger, Utica.
L. A. Timmerman, Fort Plain.
C. F. Baylis, Oneonta.
A. W. Twiggar, Ossining.
F. C. Walker, Brooklyn.
A. R. Starr, New York.

NORTH CAROLINA.

No report.

NORTH DAKOTA.

No report.

OHIO.

Delegates

L. L. Barber, 718 Spitzer Bldg., Toledo.
H. C. Brown, 609 Hartman Bldg., Columbus.
J. R. Callahan, 717 Gwynn Bldg., Cincinnati.
F. M. Casto, 458 Rose Bldg., Cleveland.
L. E. Custer, 28 N. Ludlow St., Dayton.
Charles W. Mills, Chillicothe.
Weston A. Price, 8803 Euclid Ave., Cleveland.
T. I. Way, 52 Groton Bldg., Cincinnati.

Alternates.

E. S. Braithwaite, Chicago Junction.
G. D. Edgar, Defiance.
E. E. Hall, First National Bank Bldg., Columbus.
W. H. Hayden, Youngstown.
J. W. Jungman, 632 Rose Bldg., Cleveland.
C. H. Schott, 1004 Neave Bldg., Cincinnati.
George H. Wilson, 701 Schofield Bldg., Cleveland.
Z. N. Wright, Conover, Bldg., Dayton.

OKLAHOMA.

Delegates

B. L. Shobe, Tulsa.
C. R. Lawrence, Enid.

Alternates.

N. C. Wood, Ardmore.
G. G. Lowes, Lawton.

*Report received too late for publication in this department.

OREGON.

Delegates

Herbert C. Miller, N. P. D. College, Portland.
Maude Tanner, Morgan Bldg., Portland.

PENNSYLVANIA.

Delegates

C. S. Van Horn, Bloomsburg.
W. A. Spencer, Carbondale.
J. F. Biddle, 517 Arch Street, Pittsburgh.
H. S. Seip, 721 Walnut Street, Allentown.
H. E. Friesell, 1206 Highland Bldg., Pittsburgh.
J. D. Whiteman, Mercer.

Alternates

G. S. Schlegel, 147 N. 8th Street, Reading.
F. L. Davenport, 17 N. Franklin Street, Wilkes-Barre.
A. P. Lee, 1728 Chestnut Street, Philadelphia.
S. P. Cameron, Grand College, Philadelphia.
Victor Cochran, S. E. Cor. 15th & Walnut Street, Philadelphia.
A. H. Reynolds, 4630 Chester Avenue, Philadelphia.

PHILIPPINE ISLANDS.

No report.

PORTO RICO.

No report.

RHODE ISLAND.

No report.

SOUTH CAROLINA.

Delegate

R. Webb Thompson, Spartanburg.

Alternate

G. A. Milner, Aiken.

SOUTH DAKOTA.

No report.

TENNESSEE.

No report.

TEXAS.

Delegates

G. P. Robertson, Moore Bldg., San Antonio.
Julian Smith, Dallas.
W. R. Weber, 506 Littlefield Bldg., Austin.

Alternates.

Guy Morgan, Paris.
Thomas P. Williams, 308 Binz Bldg., Houston.
B. F. Thielen, Paris.

TRUSTEES.

Clarence J. Grieves, 201 W. Madison St., Baltimore, Md.
Waldo E. Boardman, 519 Boylston St., Boston, Mass.
Marcus L. Ward, Ann Arbor, Michigan.
Thomas B. Hartzell, 716 Donaldson Bldg., Minneapolis, Minn.
C. L. White, 611 Colcord Bldg., Oklahoma City, Oklahoma.
Geo. T. Williams, 1100-1101 Cobb Bldg., Seattle, Washington.
H. J. Burkhart, 300 Sibley Bldg., Rochester, New York.
J. P. Buckley, 39 E. State St., Chicago, Illinois.
Thomas P. Hinman, 4th National Bank Bldg., Atlanta, Georgia.

UTAH.

Delegate
Wm. G. Dalrymple, 2421 Washington Ave., Ogden.
Alternate
John F. Christiansen, Walker Bank Bldg., Salt Lake City.

VERMONT.

Delegate
W. R. Pond, Rutland.
Alternate
G. O. Mitchell, St. Albans.

VIRGINIA.

Delegates
W. H. Street, 321 W. Franklin St., Richmond.
H. Wood Campbell, Suffolk.
Alternates.
W. H. Pearson, Norfolk.
Guy R. Harrison, 915 1-2 E. Main St., Richmond.

WASHINGTON.

No report.

WEST VIRGINIA.

Delegates
J. S. Stone, Clarksburg.
O. W. Burdats, Wheeling.
Alternates.
J. H. McClure, Wheeling.
J. D. McCue, Bluefield.

WISCONSIN.

No report.

WYOMING.

Delegate
Peter Appel, Jr., Cheyenne.
Alternate
Wm. Kocher, Casper.

DELEGATES AND ALTERNATES FROM THE THE SECTION.

Section I.

Delegate
*E. E. Belford, 10217 St. Clair St., Cleveland, Ohio.

Section II.

Delegate
*L. A. Neil, New Decatur, Alabama.
Alternate
*J. A. West, Des Moines, Iowa.

Section III.

No appointment.

STATE SOCIETY OFFICERS' SECTION.

No appointment.

*Appointed at 1916 session.

HOTEL RESERVATIONS.

Altho New York can accommodate those in attendance on the annual session, hotel reservations should be made early.

The Local Committee on Arrangements and the Officers request that these be made directly with the hotels. In writing for reservations, it is well to state the number of rooms desired for the accommodation of your party, the day you expect to arrive in New York and how long you plan to remain. Also, name the rate you are willing to pay. Those who desire rooms with bath should state whether a tub or a shower is preferred. It will be a great comfort on arriving at New York to go at once to a hotel which is expecting you rather than to make a round of hotels, finding a number of them completely filled and finally being compelled to take the first lodgings which can be found in a hurried personal search. The list appearing in the March issue locates the different hotels and gives their rates. Make your selection, write to the manager and take with you to New York his reply assuring you that a reservation has been made for your use. Then, on arriving all you will have to do is to go to that hotel and register.

A complete table of daily rates and accommodations offered by New York Hotels may be found in the March issue of The Journal of the National Dental Association, pages 321-326.

POSTOFFICE.

An Association Postoffice will be maintained at the Registration Bureau in Hotel Astor, Broadway, Forty-Fourth and Forty-Fifth Streets. Guests are requested to order mail addressed to them, "Care National Dental Association, Hotel Astor, New York City," or to their hotels as preferred.

TRANSPORTATION TO THE MEETING

Those who are going to New York for the National Dental Association meeting October 21st to 26th are urged to consult the local ticket agent at their home town for complete information regarding fares, time limits and stop-over privileges in connection with the trip. There is on file in every ticket office the tariff sched-

ule which officially informs local agents of the rates from that point.

You should not leave the determination of the route desired until just before you are ready to start on the trip. Local Ticket Agents may have to obtain special tickets for this occasion from their general offices and you must, therefore, notify them in time so that the tickets will be available when you are ready to commence your journey.

From various points in the United States, passenger associations have announced special rates as follows:

Central Passenger Association: This comprises the territory of the lower peninsula of the state of Michigan. All territory as far south as the Ohio River, as far east as Buffalo and Pittsburgh, and as far west as a direct line drawn between St. Louis and Chicago. Two cents per mile in each direction. Signature form of tickets will be sold October 19, 20, and 21, final return limit to reach the original starting point not later than midnight, October 30th. A joint tariff authorizing fares for the annual session of the Association from points in the Central Passenger Association territory has been compiled.

For your information, I am giving you herewith, round-trip rates authorized for our meeting from the principal points in the Central Passenger Association territory to New York and return:

Battle Creek, Mich.	$29.25
Bay City, Mich.	28.00
Chicago	36.30
Cincinnati	30.10
Cleveland	22.90
Columbus, Ohio	25.30
Dayton, Ohio	28.10
Detroit	26.50
Grand Rapids, Mich.	30.55
Indianapolis	32.50
Jackson, Mich.	27.45
Kalamazoo, Mich.	30.15
Saginaw, Mich.	27.50
South Bend, Ind.	32.10
Springfield, Ohio	27.10
St. Louis	42.20
Terre Haute, Ind.	35.40
Toledo, Ohio	26.50

The Trunk Line Association: This serves most of New York, Pennsylvania, New Jersey, Delaware, Maryland and West Virginia, also a part of Virginia, and announces that there will be available for those attending the coming session of the National Dental Association, a railroad rate of 2 cents per mile in each direction with a minimum of $1.00 for the round trip, on the certificate plan, going and returning via same route only. Going tickets in connection with certificates to be sold October 19, 20 and 21 at one-way fares applicable to New York City on the certificate plan. These certificates must be obtained from the ticket agent at the starting point, and to be valid for the reduced fares returning, must be endorsed by the secretary of the National Dental Association, indicating that the holder has been in attendance at the meeting and is entitled to the reduction, and must also be validated by a special agent on either October 24, 25 or 26. Return tickets will be sold on presentation of validated certificates October 24-29 at the difference between the fares paid on the going trip and the fares for the round trip; these latter tickets to be limited to continuous passage to destination, which must be reached in no case later than October 30th.

New England Passenger Association: Two cents per mile in each direction, short line mileage, going and returning via same route, and that one over which one-way tickets are regularly sold, and only from points where regular one-way fare to New York City is over $1.00. Tickets to be sold or certificates issued and good going October 19, 20 and 21, and returning to reach original starting point not later than midnight of October 30th.

Trans-Continental Passenger Association: Summer rate tickets from North Pacific Coast points may be purchased

as late as September 29th, return limit October 31st.

Chicago and return	$ 80.00
St. Louis and return	77.50
New York and return	118.20

Regular nine months excursion fares, approximating two cents per mile in each direction, are in effect daily from California and North Pacific Coast points.

From California to Chicago and return	$110.00
From California to St. Louis and return	103.50
From North Pacific points, Chicago and return	109.00
From North Pacific points, St. Louis and return	103.50

Western Passenger Association and Southwestern Passenger Association: To members located in this association which comprises practically all the territory west, northwest and southwest of Chicago, wish to advise that no special rates have been announced, and you should, therefore, consult your local Ticket Agent regarding fares from your home city, and where possible to do so, arrange to purchase your tickets thru unless you find that by purchasing tickets from your home town to St. Louis or Chicago, that you can then repurchase, taking advantage of the special rates from those points as shown in previous paragraphs to New York City and return.

SPECIAL TRAIN FROM CHICAGO.

For the accommodation of those going to the National Dental Association meeting to be held in New York October 22 to 26th, 1917, arrangements have been made with the Michigan Central Railroad to operate the "National Dental Association special" leaving Chicago from the Michigan Central Station, 12th St. and Michigan Ave., at 5:40 p. m., Saturday, October 20th. This will be an all Pullman train consisting of club car, compartment care, standard sleepers, observation car and dining cars. The train will make intermediate stops on the Michigan Central at Kalamazoo, Mich., at 8:52 p. m., Battle Creek at 9:26 p. m., Jackson, Mich., at 10:24 p. m., Ann Arbor, Mich., at 11:24 p. m., and Detroit, Mich., at 12:01 midnight, and is scheduled to arrive in Niagara Falls at 7:25 A. M., Sunday, October 21st, where our train will be parked so that we may occupy our cars at any time during the day. The entire day may be spent visiting the various points of interest at Niagara Falls.

The Pullman fares from Chicago to New York, including the occupancy of our cars if desired at Niagara Falls are $6.00 for lower berth, $4.50 for upper berth, $17.00 for compartment and $21.00 for drawing room.

Arrangements will be made with one of the principal hotels at Niagara Falls to serve breakfast. The special train will leave Niagara Falls at 7:20 P. M., Sunday, October 21st, and will arrive in New York, 7:50 A. M., Monday, October 22nd, in ample time for the opening of our Convention.

The advantages of these special arrangements are many. They permit leaving Chicago at the close of the business day, Saturday, spend an entire day at Niagara Falls and still arrive in New York at a convenient hour on Monday morning. It also gives us an opportunity of renewing old acquaintances and making new ones enroute. Those desiring to use the "Special" from Chicago going thru to New York direct without stopping over at Niagara Falls can do so, arriving at New York at 5:30 P. M., Sunday, October 21st, by paying excess of $5.00 account fast time.

When purchasing your tickets, make sure that they read East to Chicago via the Michigan Central to Buffalo, New York Central to New York. Account fast time, an excess fare of $5.00 will be charged on all tickets reading from Chicago to New York on this train, but to those stopping over at Niagara Falls,

this excess will be refunded on presentation of tickets to the Depot Ticket Agents at Niagara Falls.

For detailed information, consult any agent of the Michigan Central Railroad or write direct to Mr. Fred E. Deal, City Passenger Agent, Michigan Central Railroad, 228 S. Clark St., Chicago.

Let us get together this year and make this the best convention ever held by our Association, and also try as far as possible to travel on the special train as outlined above.

COMMITTEE ON TRANSPORTATION.

D. C. Bacon, Chairman.

Announcements.

SPECIAL ANNOUNCEMENTS.—1917 MEETING.

¶ In this issue of The Journal will be found an insert of the Preliminary Program of the Twentieth Annual Session of the National Dental Association, to be held in New York City Oct. 22-26, 1917, at Hotel Astor.

¶ The official call, with list of members of the House of Delegates, will be found on pages 943-947 of this issue.

¶ The Transportation Committee makes a detail report relative to rates, schedules of special train, etc., on pages 947-950.

¶ Only members of National Dental Association and guests from foreign lands will be admitted to the New York Meeting.

¶ Bring your 1917 membership card with you. This will save you and the registration office time, confusion and possible misunderstanding.

NATIONAL SOCIETIES.

National Dental Association, New York City, October 22-26.

National Association of Dental Faculties—New York City, October 19 and 20.

National Association of Dental Examiners, New York City, October 22-23.

American Society of Orthodontists—Excelsior Springs, Mo., September 5-8.

Xi Psi Phi Fraternity, New York City, October 22, 1917.

Association of Military Dental Surgeons, New York City, Oct. 23-26.

STATE SOCIETIES.

October.

National Capital—Chamber of Commerce, October 2.

Rhode Island—Providence, October.

November.

Arizona—Phoenix, November.

December.

Ohio—Cleveland, December 4, 5, 6.

SOUTH DAKOTA DENTAL PRACTICE FOR SALE.—Fine equipment. Get details. Good office furniture. Well established. Population 10,000. Pay roll $200,000 month. Practice averages $4000 yr. Easy terms. Best location in city. Dr. H. A. Fitzgerald, Lead, So. Dak.